

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The Mining Journal is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2289.—Vol. XLIX.

LONDON, SATURDAY, JULY 5, 1879.

[WITH SUPPLEMENT.] [PRICE ..... SIXPENCE PER ANNUM, BY POST, £1 4s]

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## Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES.—No. CXXII.\*

BY J. CLARK JEFFERSON, A.R.S.M., W.E.S.C.,

Mining Engineer, Wakefield.

(Formerly Student at the Royal Bergakademie, Clausthal.)

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## SECTION VI.

The publication of these Lectures is unavoidably suspended for two or three weeks. They will then be resumed and continued regularly.

\* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergsrath Dr. von Gnoddek, Director of the Royal Bergakademie, Clausthal, Th. Harz, North Germany.

## THE MINERAL RESOURCES OF THE DUTCH EAST INDIES. No. II.

The valley of the Toboali river is the most important of the district, less from its extent than from the great quantity of tin ore which is found on the bottom and along the sides of this valley and its branches. The first reliable mention of operations in the Toboali valley appear in the mine books of the district for the year 1831. Whilst one finds in the first yearly account after 1830 the position of the mines of this district spoken of, there are no other particulars than the declaration as to the number of workpeople, the annual production, the nature of the mines, the direction and the distance of the working places with regard to the chief town of the district. It appeared that about a score of mines might have been at work. About No. 14 mine (Toeng-fo) the books of 1831 give an account of the number of workpeople and the figure of the production, and from an annual account made up ten years later it appears that the mine was first opened about 1823 in the Toboali valley, and from the statement of the old people was situated by the former chief building of No. 6 mine (Toeng-fo) before its removal in 1869. In 1836 the No. 7 mine (Toeng-hin) worked in the Inas valley, was united with No. 14 mine, and in former years some very rich ground was obtained there. From 1831 to 1840 the get of tin amounted to 1264 peculs per miner employed, each miner averaging 170-64 guildens per annum for wages. The average annual output during the ten years to 1850 was but 9-66 guildens per miner employed, and the miners' wages were 130-40 guildens per annum. In the next ten years, from 1851 to 1860, the output averaged 2-93 peculs per miner, and the miners' wages 133-05 guildens per annum; and from 1861 to 1865 the output was only 2-29 peculs per miner, and the wages 80-52 guildens per annum. Thus in 1862, or 39 years after the first opening, there was shown a loss, and in 1865 there was a debt of 263 fl.

In the yearly account for 1847 it was shown that this mine out of two pits yielded the important quantity of 3518 peculs. In 1853 the No. 7 mine (Toeng-fo) was worked, not only in the principal valley but in the tributary valley Bedok also. The ore was there very wide spread, wherefore the valley was worked over its whole breadth, but by that means a satisfactory average produce was obtained. In 1861 attention was turned to the Toeng-fo pit, opened in 1839, and a rich ore deposit was found beneath. The situation of the ore deposit at 7 or 8 metres deep, and here and there the scattered appearance of the ore, but above all things the obstinacy and bad feeling of the miners, were the reasons that in this ground no satisfactory results were obtained, so that the indebtedness of the No. 6 mine had already increased in 1867 to the sum of 38,867 florins, and it was resolved to develop more easily worked and more profitable ground. This new ground was situated in the Toboali valley, above the road from Toboali to Kapo. From 1863 to 1868 at the private mine, Toen-sioe, six pits were opened, and these, with an average number of 60 workpeople, yielded altogether 4196 peculs of tin. A systematic examination with boring tools (boor onderzoek) showed that the valley above the store of the before-mentioned private mine might still be worked with profit for about 600 metres. In this ground No. 6 mine can, with not more than 100 miners, give a very satisfactory produce during eight years, for it was shown by the borings that between the last pit of the private mine, Toen-sioe, in the tributary valley Samak, with a depth of ore bed of 3-50 to 6 metres, the yield amounts to 28 kilogrammes of mineral per cubic metre. The boring trials showed that at an average depth of 6-19 metres the ore was worth 2-609 kilogramme; so that notwithstanding the ground being difficult to work it would still be practicable to get a profit. It is also shown that the portion of the Toboali valley situate above the little tributary valley (Zijvalleijte) Samak is ore bearing. At that place for a length of 700 metres at an average depth of 3-80 metres the average produce of mineral is 1-387 kilogramme. Although the produce of the mineral here is not very large the ore bed lies at a small depth, and in easily worked ground, yet it is not probable that the ground could be wrought at a lower prime cost than 24 fl. per pecul. The still higher part of the Toboali valley is also known to be ore bearing, although no systematic boring trials have been made, yet it is shown with sufficient certainty that under present circumstances the Chinese miners cannot work there.

The lower part of the Samak valley, near its junction with the Toboali valley, is rich, and could under present conditions be profitably worked. Higher up, at a depth of 4-65 metres, the stuff yields 1-679 kilogrammes per cubic metre, so that this ground, with a price of 20 fl. per pecul would yield profits. The upper part of the Samak valley only yields a poor ore, fine as dust, which will probably never be worked to a profit. In the next valley, that has no name, ore is found which could be worked with tin at 21 fl. per pecul. In the Merapin valley the ore requires the price to be 20 fl. per pecul. In the lower part of the little Bedok valley operations were commenced about 1853, but they were subsequently abandoned through want of sufficient ore. The ore deposit was, however, tolerably regular, and might be worked when the price is over 40 fl. per pecul. The Maris valley, an important branch of the Toboali valley, was formerly worked by the mine San-joe, numbered 25, after 1831, but at other times bearing different numbers and names. This mine in 1831, with two men working, yielded 53 peculs of tin, but it gave no inducements for working it on a larger scale. Until 1836 this mine still stood in the book as a superficial working, with three men, but it was then worked as a regular valley working, with 48 workpeople. The mean working cost from 1836 to 1840 was 14-60 fl., and thenceforward 44-90 fl., or averaged over the whole valley 32-50 fl. per pecul of tin. The mine which absorbed is referred to as working between 1841 and 1853. It was worked the first year with eight men, the second with six men, and was then got regularly to work. Up to 1851 the tin cost 13-50 fl. per pecul, and afterwards 17-76 fl. per pecul. The portion of the Maris valley lying below the road from Toboali to Kapo was explored with the large boring machine, and a very poor ore deposit was met with. Above the road the produce was in a few places better, and there the ground between sections 7 and 12 could be worked at the price of 20-63 fl. per pecul for tin.

The Kawa is a little branch of the Maris, which was explored, but found to be, on the whole, without ore. Moreover, there is found not far from the mouth of the Toboali river a little valley, or rather a morass, that was worked in former years. It is also said that gold was found in it, but no satisfactory information could be obtained concerning it. With regard to the workings along the sides of the valleys belonging to the river system of the Toboali very little reliable information was obtainable, but the workings along the right bank of the principal valley, both above and below the junction with the Merapin, must have yielded a good produce, so far as can be judged from the extent of the worked out ground. Besides the working along the Maris, which has been already referred to, it is certain that the working along the Samak was also profitable; the workings there were, however, stopped, at the desire of No. 6 mine, in connection with which the work was carried on. Boring has been resorted to along the side of the prin-

cipal valley, Toboali and its branches, and along the Seroe and the Pedes valleys ore bearing ground was found nearly everywhere. Along the left bank of the first named, and along the whole of the last named, ground existed which could be worked at a price of 13-50 fl. for tin. The working of both of these places would, however, involve the stoppage of the valley workings of the No. 1 (le-tjong) mine, the water from which would be taken away. The side of the lower portion of the principal valley was not found to be workable, and the same was the case with the little valley of Gapok. In the vicinity of the Merapin valley, and above the junction of the Samak with the Toboali ore-bearing ground has been found by sinking shode pits (putjes), which is worthy of consideration. Again, along the side of a little valley which falls into the Toboali valley on the left side, a little above Goentok, many Palembang shode pits were found, which must remain from the early Malay workings.

It appears that in some places profits can be obtained when the average richness of the ground worked does not exceed 2 lb. of tin per ton of stuff. An interesting table, giving the particulars relating to the several districts of the Toboali river system at one view, shows that in sections 1 to 6 in the principal valley, and 1 to 3 in the Samak valley, 208,000 cubic metres of ground of the average produce less than 3 kilogrammes yields tin at 12-04 fl. before reduction, or at 15-05 fl. in metal. In sections 6 to 18, Toboali, 232,000 metres of nearly 2½ kilog. produce give tin metal at 16-16 fl. per pecul, whilst other workings on the Samak, Merapin, Badok, Maris Toboali, and the unnamed valley, yield tin at 25-12 fl., 27-04 fl., 25-54 fl., and in the least favourable case at 30-41 fl. per pecul. The Tagab valley forms a morassy district, and no tin ore was met with in the explorations which were made there. In the Bakong valley, which unites with the Tagab, trial workings were made in 1836 at No. 24 mine (Tech-sjin), but according to information obtained no tin ore was met with. The tributary valleys, Rinding and Djan-kang, alone possess along their sides any important ore deposits. The first of these was profitably worked many years ago at No. 4, later No. 2 mine (Te-gin). The workings of this mine extend for more than 1000 metres long on the Inas valley. By exploration important ore deposits were also found on the left side of the Rinding valley; it was, however, for the greatest part spread over such a large extent of ground that the further working was suspended. This No. 4 mine yielded in 1831, with nine workmen, 700 peculs of tin, or 77 peculs per head, but the table shows that this produce has much fallen off. In the ten years ending 1840 the yield was 27-95 peculs of tin per head, in the next ten years it fell to 22-16 and 21-56 peculs per head, in the next decade to 15-29 peculs per head. Between 1861 and 1865 the average was but 7-77 peculs, and it fell to 2-58 peculs in 1866, to 3-51 peculs in 1867, and to 2-95 peculs per head in 1868. In 1869 the mine was 3172 60 fls. to the bad. The old private mines of Lie-loh, Tjioe-pen-tjong, and Tjiam-sie are found on the sides of the Rinding valley, and from the extent of the workings it appears that formerly much ore was found, but further explorations with the large boring machine did not lay open anything of importance. Tin ore was here and there met with along the Tiroe valley, but in too small quantities to be capable of successful working. Old workings existed along the tributary valleys of Djan-kang and Kajoe-Batoe, but very little could be learned about them. By exploration tin ores were found along the Djan-kang, but they were too poor to work. Better produce was obtained by explorations with the large borer along the Kajoe-Batoe valley, and by making arrangements for bringing water from the Pagembong operations might be possible.

In the Bantil river district there are many ore-bearing valleys. The No. 7 (Tong-hin) Mine in the Inas appears to have been 5517 fls. in debt in 1831, but in the five years it yielded 1849 peculs of tin with 26 men, or 14-22 peculs per head per year. In 1837 the workings, which had been stopped, were connected with another mine—No. 24 (Tech-sjin). The first workings appear not to have been successful, for up to 1840 only 509 peculs of tin were obtained, or 3-27 peculs per head per year. In 1862 the indebtedness on this group of mines reached 11,540 fls., but there was then a brighter period, so that by the end of 1868 the debt was reduced to 3418 fls. And the future of this mine is secured for 15 years, for the workable ground in the Simpor valley is very rich. According to the explorations already made, 8000 peculs of tin can be produced at 13-50 fls., and frequently at less. The upper part of the Simpor valley was first worked from No. 26 Mine, and subsequently by No. 10 (Njoen-sjin). In 1831 this mine yielded 319-81 peculs with 22 men, yet at the beginning of the year there was a debt upon the land of 3442 06 fls. In 1840 the number of workmen was raised to 50. From 1841 to 1850 the Mine No. 18 (called 26 above) was not prosperous, but in 1849 the debt of 16,000 fls. was written off. The average production in that period was 6-12 peculs per workman, and the cost price was 18-61 fls. per pecul. In 1850 this same mine was extended, and the working force increased to 69 men. Taking the whole ten years to 1860 the average produce was 6-49 peculs per head per year. The mine continued to work with an average of 72 men, and to give a small yield, until 1869, and the debt at the end of 1862 was 7189 60 fls., although 6275 91 fls. was written off in 1864. The Mine No. 10 has still reserves equal to 18 years, and 9120 peculs of tin can be got. [Also the part of the Inas valley lying below the deposit worked in 1855 from No. 10 is ore-bearing, and 3914 peculs of tin at a cost of 18-54 fls. can be obtained. Above the upper part of No. 8 Mine (Soeng-fo) the rich part can easily be worked at a price of 13-50 fls. for tin. By regular working both from the rich and from the less rich ore deposit that part of the Inas valley will still yield 2917 peculs of tin at a cost of 15-31 fls. per pecul. The Remonkih valley will give 964 peculs of tin at the price of 23-50 fls. per pecul for tin. The next valley—the Irit—has a very irregular ore deposit, but there are three workable places which would yield 1416, 1192, and 2152 peculs, with the price of 21-34 fls., 20-32 fls., and 12-52 fls. respectively for tin.

The Amau valley and its tributary valleys have never been worked. At 1500 metres northward from the present mine road is a storage dam 50 metres long and several water channels, yet workings were never carried on there. In the Moentaal valley low quality ore was found, and a tolerably rich ore deposit was met with in the principal valley, near where the Bollong joins it. According to the explorations the course of ore is there 3 kilometres long, and can with a price of 23-74 fls. for tin return 10,000 peculs. The Boelung valley is not generally rich, but near its junction with the Amau the ore is richer, and 880 peculs could be returned with a price of 34 fls. for tin. The Ingong valley mine No. 9 yielded low produce stuff. From 1861 to 1865 there was obtained from this ground 1047-85 peculs; in 1866 the yield was 727-87 peculs; 321-41 peculs in the following year; and 295-02 peculs in 1868. The Lantjier valley workings were carried on without loss in 1868, but there had previously been written off 36,097 fls. for losses. During 38 years working this mine produced 24,536-63 peculs of tin, at a cost on the average of 13-50 fls. per pecul. The Djuranit and Arong-Aseem, and another valley a little higher than the latter, are unworkable at ordinary prices for tin. In the Kebon there is a small ore deposit, which would give about 60 peculs with the price at 31-84 fls. The ore body is shallower in the Bantil district than in the Toboali, varying from 3-80 metres to 6-70 metres in the latter, and from 2-59 to 6-19 metres in the former. In the Bantil district metal tin can be produced at from 12-52 fls. per pecul upwards.

The Kapo river district seems to have been but little worked. The lower valley has never been worked. The Malays, who formerly worked at the source of the Tampang, a tributary of the River Goe-gong, have left a large extent of tailings, but explorations show that ore is so thinly disseminated that work could not be carried on with ordinary prices for tin. The Kada Valley has also never been worked, and explorations did not lead to the discovery of any tin ore. In the Pompong Valley there is scarcely a couple of old pits, and on preliminary examination no ore was found. With boring machinery tin ore was found in one or two places, but not to value. The Nji-bin Mine has produced fair quantities from time to time, the tin production per head per year varying from 8-08 peculs to 26-23 peculs. The Toeng-koeanta, or Rabeh Valley, has produced a good deal of tin, but there are no figures beyond 1867. Lingkop Valley has never been worked, and the Njalong, Paja-Raba, and

Benjal-Manis have yielded but little tin ore. Various other workings are described in the same way, the conclusions arrived at being that the tin production of the Toboali district, taking the average of the last four years, is lower than the average production of the last 44 years; that the number of miners, although generally pretty constant, has slowly diminished, the average number, taking the last 14 years, being 30 men per year fewer than the last 44 years; that the production of the Government works diminishes, whilst that of the private works increases, the former now producing two-fifths of the average yearly output, and the latter one-third, whilst the private production, taking the average of the 44 years, was but one-tenth; that the payment per miner has diminished, so that this at present scarcely differs from the minimum wages at which day labourers are employed at the mine; and that the chances of the Chinese miners to return to their fatherland with their savings after a few years of hard work have during the last few years much lessened. The result of one and other of these circumstances is that the inclination to become a shareholder in a mine does not increase; that the booty-seeking and excited private operations increase to the prejudice of regular working, and that not unfrequently tin dealing and tin sharpening are carried on in connection with them both within and out of the district. And, just as elsewhere, in Bangka there is also required in the Toboali district a conscientious application of the standing regulations, and, above all, complete control of the whole tin workings.

An interesting memoir is given concerning the further researches with regard to the worth of the brown coal deposit in the Lokak division of the Bantam residency by Messrs. Van Dijk and Huguenin. A small coal seam, or more than one, seems to have existed, but it is so disturbed as to be of no commercial value as far as is at present seen. Mr. Huguenin says that as to the question whether there is a chance of the coal altering and improving in depth, it is one which for the moment is difficult to answer, but he states the various circumstances, and says that it is thus almost sure that the coal will not alter in quality in depth. The stone coal field of Bodjong-Manik, although the seam is in some places found 1½ metre thick, is of little value, being broken up, and of poor quality. The several descriptions are rendered particularly clear and interesting by the admirable plans, sections, and sketches by which they are accompanied.

## ROYAL AGRICULTURAL SOCIETY'S INTERNATIONAL EXHIBITION.

The special features of the Agricultural Society's exhibition this year were that it was metropolitan and international, and but for the lamentably wet weather which has continued almost incessantly for many weeks would no doubt have been the most successful in the history of the society, if one may judge from the excellence of the exhibits and the comparatively large number of visitors present day by day, although the entire 100 acres covered was an almost uninterrupted mass of ankle-deep mud ornamented in many places by railway companies' wagons sunk unmovably to the wheel hubs with the undelivered machinery upon them, hurdles, planks, and railway sleepers. The canvas sheds are said to be 12 miles long, and as the frontages are double, a considerable distance has to be traversed to get anything approaching an idea of the extent and completeness of the show. The whole of these frontages have an outlook upon one material only—well pugged clay, too wet for brickmaking even by hand—and to enable the exhibits to be visited at all, every kind of expedient has been resorted to. To enable the machinery to be got anywhere near the places allotted to it corduroy roads, formed of old railway sleepers, have been laid in the three main arteries, but even the railway sleepers have to be shifted to prevent their disappearance beneath the mud. From the corduroy road's the exhibitors' frontages are reached by battens and deals laid bridgewise, and the frontages themselves where passable at all have been made so by the free use of burnt-brick earth, hurdles, sawdust, chaff of various kinds, and various other materials, the most successful effort being that at the international dairy, where they have laid a solid flagging of York stone. There are about 30 acres of canvas and nearly four acres of felt roofing employed, and there are also the conservatories and buildings exhibited to show patent roofing, but the ground was scarcely less puddled under the covers than outside.

In the Machinery Department the exhibits of greatest interest to the readers of the *Mining Journal* were, no doubt, the stone-breakers, the air-compressors, and the rock-drills, of each of which several were shown. The Duplex stone or ore breaker shown by Mr. George Gimson, of Stalybridge, is probably entitled to the most prominent notice, inasmuch as it is warranted to break 75 per cent. more material than the single machine, and takes no more power to work it. The reason of this it is most difficult to understand. The power is used continuously instead of intermittently. The idea of putting two Blake's stone-breakers back to back, and working them so as to make two bites at each revolution, is not new, having been successfully tried 10 or 12 years ago; but then the jaws were moved direct by the eccentric or cam, the breaks of the jaws being brought near enough to be acted upon by the cam alternately. Mr. Gimson has a different action; he retains what would be the piston in Blake's machine, but puts a pin or axle through the bottom of it, on which the eccentric causes the piston to rock, communicating motion through the toggles to the jaws alternately. It is stated that the machine being double-acting two different sizes of stone can be broken at the same time, thus obviating the re-setting of the jaws, as in other machines. This is, no doubt, true, but it would probably be found more economic in practice to use both sides on similar stone and doing similar work, notwithstanding the apparent disadvantage of having to re-set the jaws.

The excellent stone-breakers manufactured by Mr. R. Broadbent and Sons, of Stalybridge, have several times been noticed. The special feature is the positive drawback motion which is said to be the result of great experience, 336 Blake machines, ore crushers, and combined stone-breakers and engines having been made by Robert Broadbent and Sons for the late H. R. Maraden, and after his death in 1876 a patent was taken out by them for the improvement. In the ordinary Blake stone breaker the movable jaw, when forced forward, has to compress a strong spiral spring embedded in India rubber; this not only requires very considerable power, but acts as a brake to the machine. The patent drawback motion obviates this defect. No spring is used, therefore no unnecessary strain is put on the machine; the whole power of the engine is available in breaking material, for the jaw is pulled back by an arrangement of simple levers which cannot get out of order, which requires no power to work it, and which only needs adjusting for different lengths of toggles. The stone-breaker made by Robert Broadbent and Son is thoroughly well finished, and nothing but the best materials are used. When road metal is required it is fitted with cubing jaws that cannot be surpassed; when fine metal is wanted crushing jaws are applied, which are firmly bolted to the machine, and can be renewed or reversed in ten minutes. This eccentric shafts are made of steel, therefore are much stronger; and since the patented improvement has been applied not one eccentric shaft has been either broken or strained. The movable jaw is fitted with a loose face, the jaw shaft turned, and the jaw stock bored, thus ensuring a perfect fit; the jaws or faces are made of the best and hardest chilled iron, the machine is strengthened in every part where the old machine was weak, and Robert Broadbent and Son guarantee that any stone-breaker supplied by them will give perfect satisfaction. All sizes of machines, either fixed for mines and works, or mounted on wheels for roads, can be supplied in 14 days. A stone-breaker can always be seen in operation at the Phoenix Works, and samples of any kind of material will be broken for those who desire it.

Amongst the machinery in motion the patent Ingersoll rock-drill, exhibited by Messrs. La Gros, Mayne, Leaver, and Co., of Queen-Victoria-street, appeared to be attracting most attention in the class, being shown in operation upon a good tough piece of stone, and working admirably. The largest size drill of this make has been at work for about 20 months at the Jersey Harbour Works, and has given great satisfaction; it has been boring holes 20 ft. deep and 3 in. diameter, and did not require 2½ worth of repairs in the year; it is now in daily use, and works as well as ever. It is claimed that the Ingersoll rock-drill may be worked either by steam or compressed air with equal advantage, and only requires a pressure of from 20 to 40 lbs. per square inch from any ordinary boiler of from 2-horse power and upwards. It is, moreover, the only feed being automatic, whatever be the nature of the rock, the piston only acts upon the feed at the precise moment when the progress of penetration warrants the advance of the drill. The simple construction of the machine insures its durability, and by a simple tappet movement a cushion (steam or air) is formed at each end of the cylinder, which not only protects the heads from injury, but prevents all jar and vibration to the machine and its parts while working. They are very compact and portable, the smallest weighing about 120 lbs., and will bore holes from ¾ in. to 1½ in. diameter at the rate of 3 to 12 in. per minute, advanced a heading in the Merthyr Extension Railway, Dowlais, South Wales, at the rate of 40 ft. (lineal) per week. At the Torquay Main Drainage Works two of the same sized drills make an average of 30 ft. a week, stoppages included, in a large heading for many months. The drills may be worked at almost any distance from the air-compressor without material diminution of power beyond that due to friction in the pipes.

The Eclipse rock-drill, which also attracted attention, is a mo-



fication of the Ingersoll, but many considerable alterations have been made, which are claimed to give far better results. Both inventions are in the same American hands, although in this country there are different agents. It is remarked that the Eclipse has been perfected not only at a great outlay, but with the advantage of actual daily practice, without which it is impossible to construct a perfect machine.

The result is that the movements upon which superiority is claimed are perfect, the action of the valve, not being controlled by any mechanical appliance, is so gentle, yet strong, and all cause of destruction to these parts from jar or otherwise thoroughly obviated. The small drill is very compact and portable, weighing about 90 lbs. It will bore holes to any angle, and from 3/4 in. to 3/8 in. in diameter, at the rate of from 2 to 12 inches per minute, according to the various classes of stone, with a pressure of 20 to 30 lbs. per square inch. In the larger size machines all pieces are made a limited weight, in order to ensure their transport to all parts. Its feed being strictly automatic, whatever be the nature of the rock, the piston never acts upon the feed arrangement except at the precise moment when the progress of penetration warrants the advance of the drill. Let the rock be hard or soft, or full of seams, whether the pressure be low or high, or whether the drill be fixed to any peculiar angle, and boring at the rate of 2 in. or 12 in. per minute, it does not affect the regularity and effective duty of the feed, and the perfect mechanical result of advancing the machine forward at precisely the rate of its progress into the rock. In connection with the Eclipse drill, the Reliance compressor was also shown by the same firm. It is well known that in deep shafts, tunnels, and all underground workings steam cannot be used as a motive power, because of the condensation that takes place in conveying it even a very short distance, and, besides, the discharge of the exhaust steam renders working impracticable. The use of compressed air removes both of these disadvantages, for air which has been compressed can be carried at comparatively small expense to any distance without any very serious loss of power. The Reliance Air Compressor has in practice more than realised the expectations of its inventors. The extreme simplicity, the perfection with which it accomplishes its work, its strength, compactness, and durability, combined with effective power, renders it a machine capable of application to any work where motive power is required. It consists of two steam and one air cylinders, worked by a centre crank, with two crank pins, forming throw for side valves. The inlet valves are arranged at each end of the cylinder, and are actuated by the momentum of the piston. The delivery valves are arranged on the top of the cylinder at each end, and the air is conducted through a slot into the receiver. The special advantages claimed for the Reliance compressor are—absolute certainty in the action of the valves at any speed; perfect delivery of the air at any speed or pressure; the heating of the air entirely prevented at any pressure; power applied to the very best advantage; access obtainable to all valves without the breaking of cylinder covers; entire absence of springs or friction to open or shut the valves; uniformity of pressure maintained; absolute economy in first cost and after working; and that no foundations are required.

Specimens of Sturgeon's high speed air compressors are exhibited by Messrs. Clayton, Howlett, and Venables, Atlas Works, Harrow-road. They are made both with and without the steam-engines attached, and are claimed to be the most effective and economical air compressors extant. The steam and air cylinders are mounted upon a strong iron bed, which is made hollow, and serves the purpose of a receiver. Each machine is fitted with steel crank shaft and crank pins placed at right angles, balanced fly-wheels, patent stuffing-box valve, and water-cased cylinder, lubricators, &c., complete. As the receiver forms the bed or main frame of the whole machine it adds to its stability and compactness, rendering costly foundations unnecessary; the whole driving engine, compressor, and receiver being entirely self-contained and extremely compact may be readily transported from place to place as required. The distinctive advantages claimed as compared with all preceding air compressors are:—Increased speed and reduced size; absolute certainty in the action of the valves; perfect delivery of the air at any speed or pressure; a separate receiver dispensed with; the power applied to the best advantage; reduction in weight and saving in cost of transport; the heating by compression utilised; over heating prevented; valves easily accessible for repairs, &c.; uniformity of pressure; small working space required; and absolute economy in first cost and after working. Messrs. Clayton have also designed a smaller and very convenient arrangement for limited mining operations, for driving rock drills, coal cutters, &c. They are constructed with the object of being driven by a portable or other engine, or from a line of shafting, or by pulley or gearing from a water-wheel. The beds furnished with these compressors are provided with a hollow portion serving as a small receiver. In cases where the air driven engine works intermittently, consuming at each working a large quantity of air, an extra receiver is recommended. By such an arrangement Sturgeon's high speed air compressors are rendered especially available for ironworks and factories employing steam-hammers, riveting machines, and small engines far from the main motive-power, which can be worked with greater benefit and economy by compressed air than by steam; and it is important to note that the speed can be increased in proportion to the quantity of air required, an advantage possessed alone by these compressors. The compressors are fitted with the patent stuffing-box valves and water-cased cylinders, pulley, and all usual fittings.

An excellent fan—Rammell's patent—for ventilating was exhibited in the machinery in motion department by Messrs. Thornehill and Warham, of Burton-on-Trent, and Great George-street. It has the great recommendation of being very compact and self contained. The brickwork and masonry required is almost limited to the amount necessary to make a flat bed to receive it, whilst the mode of utilising the iron plate, which forms the equivalent of the bed plate and standard, to protect the engines ensures the maximum of strength and rigidity, with the smallest possible expenditure of material.

Many other interesting exhibits will be noticed in a future Journal.

#### FOREIGN MINING AND METALLURGY.

The amount of business passing upon the Brussels metallurgical bourse has continued limited. Enquiries are certainly made, but little business is done. It appears from the evidence which has been collected in connection with an enquiry into the condition of metallurgical industry in the German Empire that Belgian girders compete with difficulty upon the Baltic coast with German girders, notwithstanding the low price at which they are offered, and that the Germans are now only purchasing No. 3 Belgian iron, corresponding to the ordinary descriptions of iron rolled by them. It appears from a report prepared by M. Berchem, principle engineer of mines in the province of Namur, that 18 mines of ironstone were inactive in the province in 1878, as in 1877. M. Alfred Brasseur is endeavouring to direct the attention of Belgian industrialists to Mexico as a field for their products.

There is nothing very striking to report in connection with the Belgian coal trade; dullness is still the order of the day. M. Berchem, principal engineer of mines in the province of Namur, has just presented a report on the state of coal mining industry in that province in 1878. The number of mines in activity in 1878 was 18, as compared with 21 in 1877. The number of centres of working in activity in 1878 was 22, against 23 in 1877; and the production of 1878 was 414,000 tons, of the value of 125,200*l*. The production was 12 per cent. in excess of the corresponding production in 1877, but the value was between 7 and 8 per cent. less. The average sale in 1878 was 13*s*. 9*d*. per ton; in 1877 it declined to 6*s*. 2*d*. per ton, showing a reduction of 55 per cent. in five years. The number of workmen employed in the province in 1878 was 2957, or 206 less than in 1877, although the production of 1878 was somewhat in excess of that of 1877. The average wages paid were about the same in both years. The cost price of the coal raised in the province last year was reduced to 7*s*. per ton; but notwithstanding this coal was worked, upon the whole, at a loss last year. It is noticed that the French demand for coal in the province of Namur is falling off.

In the French department of the Haute-Marne the foundries are not without orders. In the Nord the situation is nearly the same as it was a month since. Orders for merchants' iron are still numerous. In the Meurthe-et-Moselle the pig for refining has been dealt in at 2*s*. 3*d*. to 2*s*. 5*d*. per ton, according to the periods allowed for delivery. No. 3 casting pig is worth 2*s*. 14*s*. 6*d*. per ton, and the demand has been of some little importance. In the Ardennes the state of affairs is not bad, upon the whole; the forges have work assured to them for the moment, and even for some time to come. Quotations for iron have ranged from 6*s*. 12*s*. to 6*s*. 16*s*. per ton. In the Loire-et-Rhone the iron trade continues to exhibit a favourable tendency, and the activity prevailing is considered to be sufficient to enable producers to establish an advance.

A short line from Rome to Tevoli has just been opened for traffic. Some of the inclines are very severe—1 in 16. The engines weigh 24 tons, and they draw four carriages containing 130 passengers. The carriages were made at Milan. The locomotives were supplied by MM. Carls Frères, of Gond, and the rails which are of iron, and which weigh 50 lbs. per yard, were rolled by MM. Pierard Frères, of Montigny-sur-Somme. The last-named firm has also supplied five-eighths of a mile of iron sleepers on the Serres and Battig System, for a line from Milan to Sironno. Belgian firms would thus appear to have gained a good footing in Italy.

The Suro Tunnel under the Comstock mines, Virginia City, Nevada, having its drainage arrangements completed, has begun to receive water from all the mines, draining them from a level of 1600 ft. below the surface. This is an important event in silver mining, giving those mines facilities for working far below their present depth.

The proprietor of the Compostela Coal Mines in Cebu has offered to supply the Spanish navy on the Philippine station with coals at the rate of \$5 per ton. The Diario, in pointing out the advantages of this offer, states that Cardiff coal costs \$11 to \$13 per ton. Should

the Government construct a tramway from the mines to the port of shipment the price of the Compostela coals would be reduced to \$4 per ton.

#### Meetings of Public Companies.

##### COLONIAL BANK.

The 83rd half-yearly general meeting of proprietors was held at the Bank House, Bishopsgate street, on Thursday, Mr. T. D. HILL in the chair.

Mr. JAMES CLARK (the secretary) read the notice convening the meeting, and the subjoined report of the directors was submitted:—The directors now submit to the proprietors the usual statement of debts and assets of the corporation on Dec. 31 last, including the net profit of the half-year ending at that period.

	DEBTS.	
Circulation	£ 412,374	4 2
Deposits, bills payable, and other liabilities	3,000,651	14 8
Paid-up capital	600,000	0 0
Reserved fund	90,000	0 0
Balance of profit from last half-year	2,891	9 9
Net profit for the half-year	38,503	19 11
Total	£4,144,731	8 5
	ASSETS.	
Specie	£ 330,510	9 5
Due to the bank in the colonies, on bills discounted and purchased (including those past due), &c.	1,514,512	18 8
Due to the bank in the colonies on current accounts	20,334	15 11
Due to the bank in London on bills remitted, cash at bankers, &c.	2,270,818	7 0
Bank premises and furniture in London and in the colonies	8,624	17 5
Total	£4,144,731	8 5

The general stagnation in business, and especially the great depression in our sugar market, have to some extent influenced the bank's operations, and the directors are unable to declare a larger amount of profit than is shown in the above statement. A Select Committee of the House of Commons is now sitting on the sugar industry, and should its report result in placing the trade on a free and equitable footing, it will relieve your directors of much anxiety. Under these circumstances the directors, having provided for all bad and doubtful debts, and for income tax, recommend that out of the net profit amounting to £38,503 19 11 Added to the amount brought forward of £2,891 9 9

Together	£41,695	9 8
An ordinary dividend of 6 per cent. be made on the paid-up capital for the half-year ending Dec. 31 last, which will require	38,000	0 0
Leaving	£ 5,095	9 8
Of which it is proposed to carry	3,000	0 0
To reserve fund, and the balance of	£ 2,891	9 8
Forward to the next half-year.		

The CHAIRMAN said that in moving the adoption of the report he wished it was in his power to say anything to make matters appear brighter than they were, but, unfortunately, the depression was as great in the West Indies as it possibly could be; indeed, it was so difficult to employ capital there without unreasonable risk that they had found it absolutely necessary to keep much in this country, although it had earned but a small amount of interest, and he was sorry to say they had, therefore, been compelled to reduce the amount of interest allowed to their customers in the West Indies. The excessive amount of bounty sugar raised on the Continent had had a most prejudicial effect upon prices, and had undoubtedly caused serious loss to the planters in the West Indies. He felt the time had now come when, unless a check were put upon the bounty system, the sugar growing interest of the West Indies would be extinguished. Both protection and the bounty system were opposed to free trade, but the evils of protection were comparatively limited, whilst the evil of bounties extended to all other producers within range, and injury must recoil on those who receive as well as those who pay the bounty. He cordially hoped that the Select Committee which had now been appointed would have a beneficial result, and that in January next they would meet under more favourable auspices. He concluded by formally moving the reception and adoption of the report.—Mr. HENRIQUES seconded the motion.

A PROPRIETOR asked whether they had been prosperous since January, as he thought it very desirable that they should know whether they were at the present time in a better or worse position than at the date to which the accounts were made up.

The CHAIRMAN said that they were certainly not in a worse position now than in January; it was only the future with regard to which they had apprehension.

The motion for the adoption of the report was then put to the meeting and unanimously agreed to.

The dividend of 6 per cent. for the half-year was then formally proposed and unanimously sanctioned, and thanks having been voted on the proposition of Mr. Bravo, to the Chairman, directors, and officers of the Corporation, and duly acknowledged, the proceedings terminated.

##### WHEAL CREBOR MINING COMPANY.

The general meeting of shareholders was held at the offices of the company, Gracechurch-street, on Thursday.

Mr. J. Y. WATSON in the chair.

Mr. C. B. PARRY (secretary) read the notice calling the meeting. The CHAIRMAN said the financial position of the company was as follows:—The loss for the four months had been 472*l*. 14*s*. 9*d*.; there was cash in hand 104*l*. 3*s*. 10*d*.; and the liabilities over assets were 473*l*. 15*s*. 6*d*. With respect to the mine, Capt. Andrews, who was present, and would answer any questions, was returning 20 tons of copper per week, which was paying the cost, and in six weeks he would be able to double that 20 tons, and make 300*l*. per month profit. Therefore, the finances were now put in thoroughly good order he hoped this was the last call they would have to make.

Mr. PARRY then read the accounts, which were passed. The CHAIRMAN said the committee considered that a call of 2*s*. per share, which would amount to about 400*l*., would be sufficient to meet all the requirements, and to put the mine in good condition.

On the motion of Mr. GUTIERREZ, seconded by Mr. CLIFF, a call of 2*s*. per share was then made.

The CHAIRMAN said the shareholders would be pleased to hear a capital report from Captain Andrews.

Mr. PARRY read the report of Captain Andrews, which was as follows:—

July 2.—I beg to hand you my report for the meeting appointed to be held to-morrow, Thursday. Since your last general meeting, held March 7 last, operations have been chiefly confined to the driving of the 120 and the 108 fms. level east, rising in the back of the 45 towards new shaft, also sinking the new shaft below the surface, besides which one stop has been working in the back of the 120. Since the last meeting the 120 east has been driven 12 fms. 1 ft., about 8 fms. of which was in unproductive ground, but in the last 4 fms. driving the lode has very much improved, and has varied in value from 10*l*. to 35*l*. per fathom, but a few feet behind the present end we met with one of those oblique branches we find occasionally crossing the lode, and which almost invariably disorders it for a short distance, but I am glad to say it is again improving, and is now 4 ft. wide, and worth 20*l*. per fathom. The 180 east has been driven 7 fms. 2 ft. on a lode varying from 5 to 7 ft. in width, and worth from 10*l*. to 25*l*. in value; in the present end the lode is 6 ft. wide, and worth 20*l*. per fathom. A winze has been sunk below the 108, which is now down 8 fathoms below the level; this winze is now 9 fms. 2 ft. behind the 108 end, and when commenced to sink below the level was worth about 10*l*. per fathom, but has since gradually improved, and was worth a week ago 50*l*. per fathom—at the present time the lode is 6 ft. wide, and worth 45*l*. per fathom. In stopping the back of the 120 we met with a branch running obliquely through the lode, and in following its course we intersected another lode running parallel with the lode the stop has been worked on; this is 10 to 12 ft. south of the lode worked on in the stop in back of the 120, and is apparently going down south of the lode we have been working on, and is going east and west, and appears to be altogether a separate lode from that we have been working on. In driving east it is 2 1/2 ft. wide, and worth 15*l*. per fathom; in driving west it is 3 ft. wide, and worth 20*l*. per fathom. The 45 east has been driven about 8 ft., since which I have taken the men and put them to rise in the back of the 45 towards the new shaft with the view of effecting a communication as soon as possible, but after rising 8 fms. 2 ft., and sinking the shaft 8 fms. 4 ft., and which according to the dialling had spent the half between the two points, and 8 or 9 ft. over, we have not communicated the two points; therefore, I am afraid there is an error in the dialling, and if a communication is not effected in a few days I think it better to get the ground re-dialled. In conclusion, I beg to say the mine is opening out very encouragingly, and we are at the present time raising over 20 tons of ore per week from the ends and winzes (and not a single stop working), which at the present low price of copper will leave a profit on the working cost of the mine, but after the winze is holed to the 120, which I hope will be done in about six weeks from this time, we shall in my opinion have no difficulty in doubling our returns, which will leave a profit at the present low standard of something like 300*l*. per month.—JOHN ANDREWS.

Captain ANDREWS, in reply to a question, said they were raising 20 tons of ore per week from the ends and winzes alone, and not a stop working. Everything was opening up very encouragingly, and he believed that in about six weeks they would be able to make a profit of 300*l*. per month.

Mr. POWELL asked the length of the winze sinking under the 108?—Captain ANDREWS said they were carrying it about 8 feet long, but he only valued it for 6 feet long.

Mr. POWELL: You are sure the discovery is a new lode, and not a branch?

Capt. ANDREWS said that as far as could be seen there was no doubt of its being a new lode; it was running parallel to the lode they were taking away, and 5 or 6 feet from it.

Mr. GEORGE BATTERS asked what profit per share per quarter a profit of 300*l*. per month would give?—Mr. GUTIERREZ said it would give a profit of 12*s*. per share per annum.

Mr. GEORGE BATTERS asked how it was that so small a quantity of ore would leave so large a profit? Was the mine worked cheaply?—Capt. ANDREWS said it was the cheapest mine to work in the two counties, and if the mine opened up as at present it was not unreasonable to suppose the returns would very largely increase.

The CHAIRMAN, in reply to a question, said it would take about twelve months to get the shaft down to the 120, but the captain stated they would be able to return a profit of 300*l*. a month before they got to the 120.

Mr. BATTERS asked whether the new discovery looked like a permanent one?

The CHAIRMAN said that formerly the old Wheal Crebor yielded 150,000*l*. worth of copper, and the Crowdale returned the same amount, and the company possessed the ground between those two courses of ore, and there was every reason for believing in the permanence of the mine.

Capt. ANDREWS also said that, looking at the stratification in which the ore was embedded, the lode looked like turning out a thoroughly good and permanent one.

Capt. ANDREWS, in answer to Mr. Wilson, said he fully adhered to all that he had said and written concerning the greatly improved appearance of the mine and the value of the different points, and in that opinion he was supported by the opinion of other experienced miners, and by the Duke of Bedford's agent.

Mr. GREGORY said that for his own satisfaction, and for the satisfaction of a gentleman who was a large holder, he instructed Capt. Goldworthy to inspect the mine, which he did on two different occasions, and both those reports verified in every respect all that he had heard and read from Capt. Andrews.

Mr. ROSEWANE said he had been underground, and, speaking with considerable knowledge and experience of these matters, he had no hesitation in saying that the discovery made was a most important one; it was a porous lode, and showed a great body of ore in the heads and in the bottom. Judging from the water, there was every reason to believe that there was a great quantity of ore ahead of the present discovery. He bore testimony to the correctness of Captain Andrews' report; he valued the discovery equally strongly with Captain Andrews. A better defined lode he did not wish to see.

The CHAIRMAN said the meeting should have been made special to forfeit the shares on which the calls had not been paid. There were only 47 shares, and as it was probable these would be paid upon it was not proposed to forfeit them, therefore the extraordinary meeting would not be held.

After a short discussion on matters of detail, in the course of which strong opinions were expressed regarding the great promise of the mine,

Mr. WILSON moved a cordial vote of thanks to Capt. Andrews, stating that he did so from a personal experience of Capt. Andrews, and believed he would push on the works with vigour and economy.

Mr. PARRY said that, as secretary to the company, he wished here to state that all Capt. Andrews' reports had been borne out by actual results.

The resolution was seconded and carried, and a cordial vote of thanks to the Chairman and committee closed the proceedings.

#### UNITED VAN CONSOLS AND GLYN LEAD AND BARYTES MINING COMPANY.

The ordinary general meeting of shareholders was held at the Guildhall Tavern, yesterday.—Mr. W. THOMAS in the chair.

Mr. J. COOPER (the secretary pro tem.) read the notice calling the meeting.

Mr. J. COOPER said that before any formal resolution was put to the meeting he would allude to the balance-sheet, and show what had been done since the last meeting. On the debtor side the principle thing was the fact that 6455 preference shares had been called up, and on 6281 of those the full amount had been paid up, whilst on 174 87*l*. had been paid up, making altogether 6368*l*. The other items were the same as in the previous balance-sheet. On the creditor side, except the centre column, which showed the expenditure upon the mine down to May, 1879, which showed that the labour cost, &c., was 451*l*.; machinery, buildings, plant, 12*l*.; present secretary's salary and office rent, 47*l*.; accountants' charges, 30*l*.; Mr. Stansfield's charge as secretary to the Van Consols Company, 133*l*.; office expenses, 20*l*.; printing and stationery, 50*l*.; travelling expenses, 86*l*.; expenses of meeting, 2*l*.; law costs, 6*l*. 10*s*.; law costs, Messrs. Winsor and Norris, on account, 238*l*.; and other small items. Besides that 5000*l*. had been paid to Van Consols for machinery, and 617*l*. for maintenance, legal and other expenses, incurred prior to handing over the mine. There was a memorandum to the effect that the following were not included in the above balance-sheet—the company's bill of law costs (not yet delivered), including those connected with the amalgamation of the two companies; the amount of expenses of the members of the committee appointed by the shareholders of the two companies; the amount of the cost sheet for the month of May. The shares in this company have yet to be allotted to the holders of shares in the Van Consols Company in exchange for same. It should add there was a claim under the contract which might result in a demand upon this company.

The CHAIRMAN said that since he had been connected with the company he had done the best he could for the welfare of the shareholders. He had spared himself neither trouble nor expense, and he believed the recent discoveries would prove of great benefit to the company. He believed there was a splendid property if properly developed, which never yet had been the case. He had many difficulties to contend with, and also a great deal of unpleasant work. In the last two years he had spent 175 days in London, and he should not have done so, but he had a good opinion of the property. He would ask Capt. Roach to explain the plans and sections on the table.

Capt. ROACH, by means of a plan and section, explained the progress which had been made, and the present condition of the mine, which promises a good discovery in the immediate future. Recently they had tapped streams of water sufficient to drive a small water-wheel, and the water also denoted that they had something good before them. If they found a course of lead there where they expected it they would have a mine second to none in the Principality. The ground was very congenial. The principal point of interest was at the bottom of Murray's shaft.

Mr. JAMES COOPER said the shareholders had found the money necessary to carry on the mine, and it would be seen by the accounts that they were indebted to him in the sum of 197*l*. 10*s*. 11*d*. (Hear, hear.)

The CHAIRMAN then moved the adoption of the chairman's and Capt. Roach's reports and the accounts to May 31, 1879.—Mr. JONES seconded the motion.

Mr. BOULTON said he had recently visited the mine, and he was very favourably impressed with the promise of the property. Referring to the working of the mine, he said he believed they would be able to open up the mine by the shafts opened on the south lode.

Mr. TAYLOR, a clerk to the late Mr. Matthew Greene, tried to speak, but a resolution was passed that he be not heard, owing to the personal character of his observations.

After a few remarks from Mr. PRICE JONES, who expressed his belief in the goodness of the property, the resolution for the adoption of the report and accounts was put and carried.

Mr. STURGE moved that Mr. William Thomas be elected managing director of the company, and said they could not have a better man in that capacity.—Col. PERCIVAL seconded the resolution.

The resolution was put and carried.

The CHAIRMAN acknowledged his re-election; he said the creditors had already been paid 10*s*. in 1*l*., and added that it had not been for his own exertions there would not have been a shilling paid.

On the motion of Col. PERCIVAL, seconded by Mr. LAITY, Mr. Adam Murray was re-elected a director.

On the motion of Mr. BOULTON, jun., seconded by Mr. AUTHUR, Mr. Thomas JONES was re-elected a director.

Mr. JAMES COOPER said the next question was the desirability of increasing the number of directors, and two gentlemen had sent in their names as candidates for the office—Mr. J. C. Boulton and Mr. Charles Clarke.

On the motion of Mr. LAITY, seconded by Mr. FRANCIS, Mr. J. C. Boulton was elected a director.

On the motion of Mr. PRICE JONES, seconded by a SHAREHOLDER, Mr. Charles Clarke was elected as a director.

Mr. BOULTON acknowledged his election, and then moved that the directors should be authorised to issue the remaining preference shares in such manner and at such time as they may deem expedient; and he should like to have added to it that they should not issue beyond a certain number at par. If they limited the number to 1200 shares they would have ample capital to pay outstanding accounts and bring the mine into a thoroughly good and prosperous dividend-paying condition.

Mr. CHAS. CLARKE seconded the resolution, which was put and carried, after a few observations from Mr. COLLINS.

A SHAREHOLDER asked if the directors would cancel the allotment of 2563 shares, or any portion thereof, made to various shareholders, no payment in respect of which had been made, and the obligations for which are not binding upon the respective shareholders who have so applied.

Mr. FRANCIS, of Newtown, seconded the resolution, and read a report which he had received from Capt. Rich, expressing a favourable opinion of the future of the mine.

The resolution was then put and carried. Mr. J. J. Stansfield was then elected an auditor.

A vote of thanks to the Chairman and directors closed the proceedings.

[For remainder of Meetings, see to day's Supplement.]

PROSPECTS FOR HOLDERS OF MINING SHARES.—A careful examination of the prices current for metals during the six months just concluded leads to the opinion that the bottom has been touched, and that an upward movement is close at hand. A period of reaction is the inevitable result of a period of high prices, and it is a perfectly legitimate assumption to expect that the present scale of low prices must be succeeded by a return of rising markets and higher values. The long range of low prices in the metal markets has been intensified by the large imports from abroad that have been poured into this country during the last five years. This foreign mine competition is very largely bankrupt competition, and has driven weakly and low grade of ore mines completely out of the field.—In fact, the mining interest, like that of the farmers in this country, has been hard pressed by the foreigner, but with this difference in the result—the foreign capital invested in mining being entirely of a hand-to-mouth character, on any failure of lodes to produce returns, collapses entirely, and is lost, whereas those of our home mines that have stood the pressure of the crisis, supported by capital and economically managed, are now in a better position than they had been for years. The field before them is immensely narrowed, but times have shut up many mines, the universal depression has prevented any extension of mining industry abroad, so that those who have held their shares all through the long period of falling prices have now before them a prospect of an increasing return for their produce and a rising market for their shares. Another fact which must also be remembered is that the diminished trade of the world has largely reduced



The West Prussian Mining Company has issued warrants in payment of the usual quarterly dividend upon the Preference Shares at the rate of 9 per cent. per annum.



## WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,  
MINEOWNERS, STOCK AND SHARE DEALERS, &c.  
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

Ten years ago the weekly information which had previously been published for a great number of years in *WATSON BROTHERS' Mining Circular* was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the *Journal* on the *Clementina* Mine.

**ROOKHOPR.**—At one time these shares were 7½ each; then the capital failed, and there was a "reconstruction," and by the issue of shares at 1½ each 6000l. fresh capital was raised. Only a few months ago the reports were very encouraging, and we were led by the agents to expect 60 to 80 tons of lead ore per month, and a good profit. Now the capital has again failed, the company in debt 1650l., and 600l. more required to place the mine on a "sound" basis. But this, it seems, the shareholders are slow in advancing; and we suppose it will be the old story, they will let the mine slip, and allow some one else to reap the benefit of the very heavy outlay they have expended. That the mine is a good one the report of Captain Tonkin clearly shows, and it has, he says, 2000 fms. of lead ground in reserve. But the fact is, disappointed at the non-realisation of the report previously made, shareholders become lukewarm when asked for money; and, in the second place, do not like debentures. If the directors could issue additional shares at a low price we doubt not they would be taken up fast enough; and if this cannot be done the shareholders should come forward, as a large shareholder proposes, and subscribe a small sum each.

Another mine, **NORTH LAXBY**, has been bought in the Isle of Man for 1000l., and 1000l. more is required to pay off all the debts; the purchaser, therefore, offers an interest in it at the rate of 2000l. to all shareholders in the old company *pro rata*. The mine has made large returns of lead, and has had a very large sum of money spent upon it.

**GREAT LAXBY.**—We learn from the Isle of Man Times that on June 21, the day appointed by the directors for the men on strike to return to their work, only two men gave in their names. The directors, it is said, are making preparations for bringing over labour. A proposal, however, has been made that a late manager, Capt. Rowe, should be appointed to arbitrate between the men and directors, and it is hoped this will be carried out to a successful issue. These strikes are very disastrous, both to the men and to the shareholders.

**MR. WILLIAM H. H. WATSON** begs to offer his advice and services to Shareholders and Intending Investors in Mines, and in the Purchase and Sale of Shares. Has Special Business in WHEAL CREBOR; and 25 shares in ARENDAL FOR SALE at 28½ net, 24 paid.

Address: W. H. H. WATSON, 1, ST. MICHAEL'S ALLEY,  
CORNHILL, LONDON, E.C.

## Registration of New Companies.

The following joint-stock companies have been duly registered:—

**THE ALYN BANK COAL AND CANNEL COMPANY (Limited).**—Capital 20,000l., in shares of 1l. The purchasing or otherwise acquiring the business, goodwill, property, assets, liabilities, &c., of the Alyn Bank United Colliery Company (Limited) now in liquidation, on the terms mentioned in a special resolution passed and confirmed by the Alyn Bank United Company (Limited), carrying into effect any contracts or agreements relating thereto, and generally to carry on the business of colliery proprietors. The searching for, getting, working, raising, and selling and disposing of coal, ironstone, and clay, and working the said collieries and brickworks. The subscribers (who take one share each) are—R. Larchin, 4, Finsbury-circus, coalowner; A. Fowler, Bridge of Allan, no occupation; H. G. Gush, Crouchend, secretary; J. J. Lynch, 3 and 4, Great Winchester-street, merchant; W. McCullach, 23, Old Broad-street, engineer; H. Battie, 6, Howland-street, shorthand writer; J. Hicks, 25, Abingdon Villas, merchant's clerk. The names of the first directors shall be determined by the subscribers, who shall continue in office until the second ordinary general meeting of the company. The remuneration of directors shall be as the company may from time to time determine, the number not to be less than three or more than nine. No person will be eligible unless he be a duly registered shareholder.

**THE CARDIFF COFFEE TAVERN COMPANY (Limited).**—Capital 20,000l., in shares of 1l. To establish coffee taverns in and about Cardiff, and to carry on the business of a coffee and refreshment company, no intoxicating liquors to be consumed or sold. The subscribers are—A. Bassett, Cardiff, 100l.; L. Williams, Cardiff, 50l.; D. Lewis, Cardiff, 25l.; J. A. Le Boulanger, Cardiff, 25l.; G. A. Jones, Cardiff, 10l.; P. Price, Cardiff, 25l.; A. B. Bassett, Llandaff, 10l.; H. J. Paine, Cardiff, 100l.

**JOINT STOCK INVESTMENT ASSOCIATION (Limited).**—Capital 10,000l., in 20 founders' shares of 500l. and 1800 shares of 5l. The discounting bills, promissory notes, granting loans, receiving money on deposit, and the transacting of any business of a merchant or capitalist. The subscribers (who take one share each) are—W. H. Graham, Aeock's Green; W. Woolley, Birmingham; J. G. Garland, Birmingham; T. Jackson, Birmingham; W. Carr-Turnbull, Birmingham; T. E. Davies, Edgbaston; G. Johnson, Sutton Coldfield.

**HUNTER AND COMPANY (Limited).**—Capital 5000l., in shares of 5l. each. To purchase and carry on the wholesale grocery, drug, dyeing, and manufacturing of confectionary businesses now belonging to J. W. Hunter, at Stockton-on-Tees. The subscribers (who take one share each) are—C. Keithley, Stockton-on-Tees; C. Smelt, Yarn; J. W. Hunter, Stockton; F. Thomas, Stockton; W. Hunter, Stockton; W. F. Wallace, Stockton-on-Tees; J. G. Hunter, Stockton-on-Tees.

**THE IPSWICH MARITIME ASSURANCE (Limited).**—To insure upon the mutual principle against every description of marine risk, every member undertaking to contribute to the company's assets in the event of its being wound up during and within one year of the time he is a member to the extent of 10l. The subscribers are—E. Goddard, Ipswich; W. Bayley, Ipswich; W. Banlop, Ipswich; E. Garwood, Ipswich; W. J. Garrod, Ipswich; G. H. Hamby, Ipswich; A. Cobbold, Ipswich.

**THE MIRROR LAUNDRY COMPANY (Limited).**—Capital 15,000l., in shares of 10l. To acquire the premises at Putney, and to continue the business of a laundry. The subscribers are—F. Styring, Poole, 50l.; T. Walmesley, Tunbridge Wells, 50l.; F. H. S. Styring, Poole, 50l.; J. Crossland, Huddersfield, 80l.; J. H. Outhwaite, 4, Agar-street, 5l.; J. Wing, Sheffield, 1l.; Y. Lewis, 6, Cowley-street, 1l.

**AMÉDÉE JOUBERT AND COMPANY (Limited).**—Capital 5000l., in shares of 10l. To purchase the business of painters, house decorators, upholsterers, &c., of Messrs. Amédée "Joubert and Sons," at Hammersmith and 7, Percy-street, and to carry on said business. The subscribers (who take one share each) are—A. O. Bayley, Sutton W. S. Ogble, 90, Cannon-street; H. C. R. Joubert, 7, Percy-street; J. Joubert, 7, Percy-street; W. White, 50, Regent-road; E. B. Lawes, 25, Bucklesbury; H. J. Davey, Stoke Newington.

**SPLITTER.**—The following figures represent the exports of spelter during the first five months of the year:—1877, 2152 tons, value 48,022l., average price per ton 22l. 6s.; 1878, 2939 tons, value 67,665l., average price per ton 23l. 10s.; 1879, 2121 tons, value 48,061l., average price per ton 22l. 16s.

## Mining Correspondence.

## BRITISH MINES.

**ABERLYN.**—J. Roberts, July 2: The No. 2 end on the heading is mixed more with quartz than I have yet seen it, and looking very promising for lead. It contains still a good quantity of blende. The lode in the No. 2 on the shale seems to be widening out very much, and approaching nearly the character of the great lode. We have cut through it 3 ft., and have no appearance of the hanging wall. It is looking very well for blende. The clearing of the deep adit on the shale is still rather a tedious job. We have no idea how far this end is driven. We shall sample 50 tons of blende to-morrow.

**BETTS-WYCOED.**—H. T. Haley, July 3: The different points underground fully maintain the value given last week. Now that we have a good supply of water for dressing shall make better progress, and hope quickly to have a parcel of lead for sale. We have cleared the old level east and west of engine-shaft, and find the lode is large, and of a very strong and masterly character, containing good lead, blende, spar, &c., but not sufficiently open to give its value.

**BLAEN CAELAN UNITED.**—J. Fell, July 2: Since my last report better progress has been making in the 30 east, and will shortly hole to the winze sunk from the 20; I find the lode 2 fathoms wide behind the forebrest, containing lead and copper, worth 50l. per fathom. In the back of the adit level, west of engine-shaft, very good stopes will be laid open, and will be worked at a profit; there is a very large extent of ground west of shaft opened by the level, but untouched, and will probably pay to work the surface. Machinery working well.

**BLUE HILLS.**—S. Bennetts, P. Vian, June 28: The lode in the 80 east end is 1½ ft. wide, and worth 6l. per fathom. A stope in the back of this level is worth 7l. per fathom, and another in the bottom of the level 16l. per fathom. In the shaft no lode has been taken up since last reported on.

**BODIDRIS.**—H. Hotchkiss, July 1: I am pleased to say we have holed the shaft with the rise, and shall lose no time now in making this complete down to the 60, so that all stuff from here will for the future be drawn up this shaft when it is completed, which will take a few weeks to accomplish. On the south side of the rise, near the top, we have cut into the lode about 4 ft. in order to see what it is like. I am pleased to say it contains lead ore throughout in soft ground, and the whole of the leadstuff looks very kindly. Of course we cannot do any more at it until the shaft is completed to the 60, which shall be done as early as possible, as I shall have the risemen to assist the shaftmen at this work. I shall put 30 of the shaftmen to prepare for removing the whim and open a water-course to take off the water from the dressing-floors, which must be done before we begin to dress. I have the carpenter altering the jiggling hutch, making them self-acting, whereby I hope to get over more work with them. The 60 end east is still in the hard part of ground, so there is no change here calling for remark. The 45 end, on middle lode, is without material alteration; everything here tends to show that when the Craiglog lode is met with it will be found productive, as the measures here are of the very best, and the joint we are now driving on continues to show very nice specimens of lead ore.

**CLEMENTINA.**—J. Roberts, W. Sandoe, July 2: The lift in the road side shaft is dropped to the bottom. The pulley stands for the rods from the water-wheel to the engine-shaft are nearly completed.

**COMBARTIN.**—T. Comer, July 3: The lode in the winze sinking below the adit level is gradually improving as we get deeper. The leader part of the lode is 1 ft. 6 in. wide, yielding beautiful silver lead ore; worth 60 cwt. per fathom, and has every appearance of further improving quickly. Good progress continues to be made in the rise above the adit level. The lode is the whole width of the rise (4 ft.), with a nice little leader of lead on the footwall; good saving work for dressing. The counter lode in the south east end of adit level presents a very encouraging appearance; the lode is 3½ ft. wide, composed of friable quartz, flookan, and killas thickly spotted with lead, blende, and mundle. The ground in the adit cross cut has a very lodey appearance, it being of a nice blue killas, with seams of quartz, and small veins of capel, with faces of lead and mundle in the joints, and the lode is letting out a good deal of water, which leads us to think we are getting near another lode.

**GWYNSWITHE.**—July 2: We have nothing new to report in Gill's lower level, as no lode has been taken down during the last week, and only 1 fm. driven (which was driven by hand labour), owing to the brass of our air compressor breaking, and we had to remain idle until a new one could be got. No change in either of our cross cuts. Our stopes and pitches throughout the mine are maintaining their respective values, as reported last week. We still have an abundance of water for all our machinery, and our dressing is being carried on with its usual regularity. Samples of 50 tons of lead ore were sent out yesterday for sale on the 15th inst.

**DE BROKE.**—J. Phillips, July 2: In the 35, driving east, we have got an improvement, and are raising some good orestuff on the main lode against the counter, and also ribs of solid ore on that lode. The stopes, on the whole, are yielding quite as much ore as usual, and are fairly promising as to continuance. The tributaries are working steadily, but their ground has rather fallen off in production. Samples of 20 tons of lead ore were posted yesterday. The whole of the plant and machinery is in good working order.

**DERESBY CONSOLS.**—J. Roberts, W. Sandoe, July 2: The ground in the end we are driving towards Cobble's lode is much wetter, and a little easier for driving. The ground is now almost spent, assuming the lode keeps its dip, as seen at surface, and we may expect any day to intersect the lode.

**DERESBY MOUNTAIN.**—J. Roberts, W. Sandoe, July 2: No. 1 end and also the No. 2 are very similar to what they were last week. The stope at No. 2 does not look quite as well close to the rise, but a little further from it the lode looks a little better, so, on the whole, it is very much the same. The stope on the Hafna lode is without any change. We have now a good supply of water, and we are keeping the crusher going from 5 in the morning to 9 or 10 at night. At the No. 5 we have reached the place where the timber collapsed in the big stope, and we have commenced spilling through it. The workings are very wide, and require a lot of timber. What distance we shall have to spill we cannot tell, but assuming that it is the same length as the stope in the No. 4 we shall have 5 fms. From the side walls left we have indications of good lead being raised from the stope by the old workers. As soon as we have got through this run and made it secure we purpose devising means for clearing up the sump below, and get directly on the lead that was left in the bottom.

**DEVON GREAT CONSOLS.**—Isaac Richards, July 3: Wheal Emma, Inclined Shaft: In the 137 east, east of Friend's cross-cut, the lode is 5 ft. wide, consisting of very fine capel, quartz, peach, and small quantities of mundle and copper ores. In the 138 east, the lode is 4 ft. wide, and worth 3 tons of copper ore, or 9l., and 3 tons mundle per fathom. New Shaft: New South Lode: In the 205 east the lode—part carrying 2 ft. wide—is composed of capel, quartz, peach, and a small quantity of both mundle and copper ores. In the 208 west the lode, 2½ ft. being carried, is composed of capel, quartz, peach, a small quantity of copper ore, and 2 tons mundle per fathom. In the 190 east the lode—part carrying 4 ft. wide—is worth 4 tons of copper ore, or 12l., and 5 tons mundle per fathom. In Knott's winze in the bottom of the 190 east the lode, 4½ ft. wide being carried, is composed of capel, quartz, some good quality copper ore, and worth for length of winze—3 ft.—9 tons mundle per fathom. In the 190 west the lode, 6 ft. being carried, is composed of very fine capel, quartz, peach, 3 tons of copper ore, or 9l., and 8 tons mundle per fathom. In the 175 east the lode, 2 ft. of which is being carried, is composed of capel, quartz, mundle, and some good quality copper ore. In the 175 west the lode is from 3 to 3 ft. wide, and worth 5 tons copper ore, or 15l., and 3 tons mundle per fathom. In the 175 cross-cut north, at the Railway shaft, the north part of the lode has been intersected and cut through, proving 3 ft. wide, and of a most promising description, being composed of very fine capel, quartz, peach, and copper ore worth 3 tons, or 10l., and 2 tons mundle per fathom. This brings some 23 fathoms like dipping south over and in front of present 75 end. In the 92 east of cross-cut, the men are engaged in clearing stuff; the lode when last taken down contained some good stones of lead ore. In the same level west the lode is large and harder, improving a little for ore, now yielding saving work for dressing. In the 92 west of winze, on north branch, the lode is large, at present yielding 12 cwt. of ore per fathom. In the 80 west of cross-cut, on south lode, we have not yet passed through the cross channel of ground disordering the lode; hence it is still unproductive. The stopes and pitches throughout the mine are without change to notice. The building of wheel pit is proceeding but slowly, the wind and rain being very hindering. The drawing and dressing are being steadily pushed forward. We sampled yesterday 45 tons of good quality silver-lead ore.

**DUBBY SYKE.**—W. Vipond, June 27: The new shaft is still in clay, which the men are timbering as they go down. One cannot judge from anything yet seen in the shaft when the sill will be met with. There is no water yet to cause trouble in working. We have begun carting stones to wall the shaft when the sill is reached.

**GRAVEN MOOR.**—D. Williams, July 3: The vein in the 54, east of new shaft, is heaved north by a cross-cut. A stope in the back of the level is worth for lead ore 4 tons per fathom. In the 54, west of shaft, the vein is 4 ft. wide, and worth 24 cwt. of lead ore per fathom. Other points underground are without any change to notice this week. We are daily expecting the new winding-engine from Messrs. Robey and Co. The engine, bed, and pillars for same are in a forward state. Full report next week.

**EAST DARREN.**—July 2: In the 104 cross cut south the ground is composed of light claystone, carbonate of lime, and spar, containing spots of copper and lead. The lode is 4 ft. wide, and worth 3 tons of copper ore, or 9l., and 3 tons mundle per fathom. In the 92 east of cross-cut, the men are engaged in clearing stuff; the lode when last taken down contained some good stones of lead ore. In the same level west the lode is large and harder, improving a little for ore, now yielding saving work for dressing. In the 92 west of winze, on north branch, the lode is large, at present yielding 12 cwt. of ore per fathom. In the 80 west of cross-cut, on south lode, we have not yet passed through the cross channel of ground disordering the lode; hence it is still unproductive. The stopes and pitches throughout the mine are without change to notice. The building of wheel pit is proceeding but slowly, the wind and rain being very hindering. The drawing and dressing are being steadily pushed forward. We sampled yesterday 45 tons of good quality silver-lead ore.

**EAST ROMAN GRAVELS.**—A. Waters, June 30: The sinking of the engine-shaft below the 85 is progressing with good speed, and the ground looks like lead producing. In the 86 south the lode has of late been split up into branches and disordered, but to-day there are signs of the different parts coming together again and becoming productive. The 75 south is in a lode 3 ft. wide, worth ¼ ton per fathom, and improving. No. 1 pitch in back of this level south is worth 2 tons per fathom. No. 2 pitch, south of ditto, is worth 1 ton per fathom. This ore looks like dipping south over and in front of present 75 end. Pitch in the 63 south is worth 1 ton per fathom. Pitch in bottom of the 50 north is worth 1½ ton per fm. Pitch in back of this level south is worth ¼ ton per fathom. Pitch in bottom of the 45 north is worth ¼ ton per fathom. Pitch in bottom of the 40 (old level) north is worth ¼ ton per fathom. Pitch in bottom of the 20 north is worth ¼ ton per fathom. We are pushing on the dressing of ore for another sampling as fast as possible.

**EAST ROMAN GRAVELS.**—Arthur Waters, July 3: The boundary engine-shaft is down 8 fms. below the 85—the ground is of a favourable character. The 85 shows two divisions of lode, both of which at present are underlying the contrary way. It is likely that the main part of the lode is standing on the west side of the drive, and I have put the men to cross-cut in that direction to prove the point. The 75 south has improved since my report of Monday last, now worth 1 to 1½ ton per fathom; this end is evidently entering the run of ore seen in the tribute pitch 4 to 5 fms. above the 75, in which there is a wide ore lode. We have eight pitches working by 19 men, at an average tribute of 3l. 16s. 10d. per ton clear of dressing cost. The pitches are estimated to yield together 8½ tons per fm.

**GAYTON.**—George Rowe, George Rowe, Jan. June 28: The lode in the 117, west of cross-cut, is 6 ft. wide, producing arsenical mundle, spotted with ore. We have discontinued the drive of this level and placed the men to extend the drive east for the present, which is very important. The lode in the 115 fm. level east is 7 ft. wide, of a most promising description, producing 19 tons of arsenical mundle spotted with ore per fathom. The lode in the stope below the 100, west of winze, is worth 6l. per fathom. The lode in the stope below the same level, east of said winze, is worth 10l. per fathom. This lode in the stope to the back of the 108 is worth 7l. per fathom.

**GLENROY.**—R. Rowe, July 1: We have started to drive out north and south from the bottom of the shaft, and are in about 5 ft. each way; the lode is very wide—size not yet proved. Now that we have made sufficient room the next step is to bring the machine to the bottom to expedite the clearing of the stuff, and we have commenced to-day to timber and case the shaft down, and as to the adit road; this will be finished by Saturday, and driving fairly resumed by Monday morning. Under any circumstances we were bound to do what we have done and are doing—that of getting the machine to draw from the present bottom, whether we drive out now, or resume the sinking. The lode is about the same in character, but I believe the shaft is going down in a barren section of the lode, and that by driving out north and south now we shall at least improve our prospects, and be better able to judge what the mine is likely to do for us.

**GOGINAN.**—July 2: There is no change worthy of remark in the different places since our last report. The dressing of the tributaries stuff has been commenced, and the machinery is in good working order. Our large reservoir is now quite filled up with water, and there is a full supply for all purposes. We have 11 tons of ore now in the bin, and we hope to get about 25 tons ready for market by the 20th inst., the next sampling day. The weather has been very wet and stormy here lately, but it is finer to-day.

**GREAT REFALLACK.**—J. Harris, June 28: The mine is looking much the same as when last reported. The tributaries have commenced breaking blende from a good lode, worth fully 2 tons per fathom.

**J. Harris, July 2:** There is no change in the mine since last Saturday. The lode in the stope maintains its value of fully 2 tons of blende per fathom, and the tributaries are breaking a good pile of lead.

**GREEN HURTH.**—W. Vipond, June 27: There is no improvement yet in the north end of the 30; it is hard and poor, in fact the vein appears to be in a regularly twisted barren piece of ground. It is worth about 8 cwt. of ore per fm. The south end is yielding about 4 tons of ore per fathom. We have done more work in this end than in the north. In the sump at the foot of incline we have come upon a hazel, but whether it will prove only a post or the hazel we had in the other sump I cannot say yet; if it is the latter the grey beds and plates are much less than in the first sump. We have begun with the delivery of the ore, and the dressing is going on satisfactorily. We have also got the posts and cutters put up on the top of the fell, between Green Hurth and the Willy Hole sets. —P.S. The ore continues going down in the sole of the south end good.

**HERODSFOOT.**—P. Temby, July 3: The lode in the rise for the new shaft over the 205 has improved, now worth 10 cwt. of ore per fathom, and it has every appearance of further improving. The rise over the 190 will be communicated to the 175 in a few days, when the shaftmen will at once commence cutting pit and prepare for sinking below the 203. The lode in this rise is still worth 12 cwt. of ore per fathom. All other places are of much the same value as last reported on. No. 2 parcel of lead was shipped at Loos on Tuesday, and No. 1 parcel will be all despatched at Bristol this week.

**HINGTON DOWN.**—Thomas Richards, July 2: The tribute ground in the back of the 120 fm. level is producing 10l. worth of ore per fathom. In the rise and stope in the back of the 110 the lode will produce 8l. worth of ore per fathom, and is still very promising. The lode in the back of the 45 level east will produce 3 tons of ore, or 12l. per fathom. The lode in the deep adit driving west is of a very promising character, containing capel, quartz, peach, prlan, and mundle, with a little rich copper ore. In the deep adit driving south the ground is moderately even, and fair progress is being made.

**LADYWELL.**—Arthur Waters, July 1: The 32 cross-cut west, from bottom of shaft, has not yet reached the main part of the lode, what we have passed through being only a branch of spar standing to the east of the lode. I am of opinion that the lode proper is perpendicular below the 16, or we should have cut into it before this. The 32, north of Webster's winze, now driven 12 fms., is in a lode 3 ft. wide, yielding solid clinker like stones of ore. We are not driving the 32, south of said winze, but shall do so when the north level is holed to the shaft and the stuff from the 32 south can be discharged to the pit direct. At present the stuff would have to be drawn to the 18 by manual labour, and thence by tram to shaft. The winze below the 16, in front of the 32 south end, is down 2½ fathoms; the lode is 3 ft. wide, worth 2½ tons per fathom. Stope in back of the 16, on west side, is worth 1½ ton per fathom. The 20, south of shaft, above adit is not to value.

**LANCASTER.**—Robert Knapp, July 3: The lode in the rise above the adit is still fully 7 ft. wide, but I do not think it is producing quite as much ore as when I wrote you last. Towards the eastern end it is quite as good as it was then, but towards the western end there is not so much lead showing. It is still, however, a magnificent lode, and if it does not decline in value whilst working up to the level above more rapidly than it has done I, for one, shall not complain. We have got into the same part of the 10 above adit, but of what width it is, or of what value, I cannot yet say, but so far it has yielded good stones of ore, and is looking well as to its general character. We are into it about 3 ft., but there is no indication of any footwall yet. The appearance of the lode here increases my confidence of the ore continuing to hold upwards from the level below.

**MARKE VALLEY.**—William George James Stenlake, June 28: We beg to hand you the following setting report:—The 90 west to be continued, by six men as per bargain; set since last monthly setting at 12l. per fathom—the lode although small carries a tolerably regular wall, and some good quality copper ore, but not to value. To stope the bottom of the 80 on south part of Rosedown lode, by four men, at 7l. 10s. per fathom; yielding 6 tons of ore per fathom. We have six men employed in the bottom of the 50, where the lode will yield fully 4 tons of ore per fathom. To stope the back of the 50, by four men, at 3l. 10s. per fathom; yielding 3 tons of ore per fathom. To stope the bottom of the 40, by four men, at 2l. 15s. per fathom; yielding 3½ tons of ore per fathom. Two stopes in the back of the 50, by four men in each, at 2l. 15s. per fathom; each yielding 3 tons of ore per fm. To stope the back of the 20, by four men, at 4l. per fathom; yielding 4 tons of ore per fathom. To drive the 10 west, by four men, at 6l. per fathom, where the lode continues from 4 to 5 ft. wide, composed of gossan, with ribs of spar, which is spotted with copper ore and mundle. To rise in the back of this level, by two men, at 5l. 10s. per fathom; lode yielding for length (9 ft.) 2½ tons per fathom. We have also set six pitches in different parts of the mine, to twelve men, at tributes varying from 9s. 6d. to 18s. 4d. in 1l.

**MELLSHAR.**—John Gilbert, July 2: The lode in the 30 fm. level, west of Gandy's shaft, is 1½ ft. wide, and producing a little saving work for copper ore. The lode in the rise in the back of this level, west of shaft, is 2 ft. wide, and worth 1 ton of ore per fathom. The lode in the 40, west of shaft, is 1½ ft. wide, worth ½ ton of ore per fathom, and improving in appearance. The lode in the 60, west of shaft, on the south-east part, is 3½ ft. wide, and still worth 2 tons of ore per fathom; but the ground is a little better for driving. The lode in the winze in the bottom of this level is 5 ft. wide, and worth 3 tons of ore per fathom. The lode in the 60, west of shaft, on the north part, is 1 ft. wide, and worth 1 ton of ore per fathom. The rise in the back of this level, west of shaft, is worth 2 tons of ore per fathom. The winze sinking in the bottom of this level is also worth 2½ tons of ore per fathom. The lode in the 80, west of shaft, has been disordered by a crossing of spar, but it is improving again, and is now 3 ft. wide, and worth 3 tons of ore per fathom. The lode in the 90, on the south part, west of shaft, is 5 ft. wide, and worth fully 2 tons of ore per fathom; and the ground is very easy for driving. The rise in the back of this level is worth 2 tons of ore per fathom. The lode in the 100, east of shaft, is 4 ft. wide, and worth 1 ton of ore per fathom. It is also making better defined walls, and the ground is easier for driving. The rise in the back of this level, west of shaft, is worth 2 tons of ore per fathom; this rise will be communicated very soon to the 90. The sink- ing of Gandy's shaft has been going on as usual without any interruption, and there is no change in the ground to notice. Skip Shaft: The ground in the 70 cross-cut, south of shaft, continues very easy for driving, but we have not yet met with anything like a lode, but the ground is crossed with very small mineral veins, which we consider a good indication. The lode in the 100, west of shaft, is 4 ft. wide, and is producing some saving work for copper ore, and occasional good stones of tin ore.

**MONYDD GORDDU.**—J. G. Green, July 2: I beg to report for the week as follows:—The 34 north, on counter lode, has improved, now worth 28 cwt. per fm. The 34 north is very stiff for driving. The 34, on cross branch, is without change. The lode in the 24 west is narrower, and the end is showing more killas—tight for progress. I am doing my best to get this end forward as much as possible towards the ore ground ahead. The 12 is still in a splendid looking lode, carrying crystals of sulphur, carbonate of lead, spar, and the usual matrix of a rich lode in this mine at a shallow depth. There is not so much blende as last week, and it is worth about 25 cwt. of lead ore per fathom. There is no alteration to notice in the stopes, which are producing a limited supply of stuff for the floors, owing to the men having a good deal of time in working and securing the lode, and to taking and stormy, and owing to the very porous and open nature of the great lode all our workings are extremely wet and troublesome to work.

**MORFA DU.**—T. Mitchell, July 3: We have no change here since the setting day. The various points are looking much as usual.

**NEW BRONFLOYD.**—Thomas Kemp, July 3: Middle Lode: The 78 end, west of Curtis's cross-cut, is reset to four men, at 10l. per fathom, including hauling and tramming; I very much regret to say the north part of the lode carried by this driving is again disordered by a joint coming in from the north, oblique crossing the driving inside the said joint. The ground appears to be more easy, and producing less ore. I hope this change is only temporary. The 52 end, east of No. 2 shaft, is reset to two men, at 180s. per fathom, hauling and tramming included; the lode in this end is presenting a good appearance, chiefly composed of killas and spar, carrying nice strings of ore, and from indications we may expect favourable results. The winze under this level is down 9½ fms.; the sinking throughout has been carried down on the north side of the lode, which has produced a little ore for the whole depth, but not to value; I intend to deepen it 15 ft. further, making the draft from bottom of level 13 fms., at which depth it will be advisable to cross-cut the lode south, to prove the width and value of the same. There is a splendid lode gone down in the south side of the lode in the bottom of the level, for several fathoms in length worth fully 3 tons of ore per fathom, and in my opinion similar results will be met with when the lode is cut through at the bottom of the winze. In order to push this work I have put on two extra men, making the number six. The price for sinking is 10l. per fathom, including hauling and tramming.

**PANDORA.**—H. Nottingham, July 2: New Lode: The stope north of No. 1 winze, under the 28, is worth 2 tons of lead and 1 ton of blende per fathom. No. 2 winze, under the 28 south, is for the present suspended. Since we have stopped drawing the water from No. 1 winze it has risen on us here. I intend now for these men to go into the 33 rise under No. 1 winze, to finish cutting it through, so that we may have the lode more thoroughly drained, after which I hope we may be able to resume sinking No. 3. The 23 end driving north looks more promising; we are now getting some nice stones of lead and blende stuff from it. No. 2 stope, being lengthened south, is without change, worth 15 cwt. of lead and 12 cwt. of blende per fathom. Goddard's Lode: The stope in No. 1 winze, under the 23, north of shaft cross-cut, is worth 10 cwt. of lead and the same of blende per fathom. The stope in No. 2 winze south is worth 15 cwt. of lead and the same of blende per fathom. —Surface: We have at last got our share of storm and rain. We have been having fierce storms of wind and rain at intervals since Friday, the heaviest fall of rain being last night, which has caused the heaviest flood we have seen since last autumn. The side bank of the water-course that runs along above the dressing floors gave way last night, and swept a large quantity of the waste heap right across the floors, mixing it with the heaps of lead stuff and almes, so that we have been all day clearing and jiggling the stuff over again. This will hinder us a couple of days with the dressing. Happily there is no other damage to name. The reservoirs are filling very fast, and I calculate now on having enough water to keep the wheel pumping and dressing the summer out.

**PARYS.**—T. Mitchell, July 3: The ground in the 50 south continues hard and spare for driving. The 98, east of cross cut, is much the same as when last reported.

**PATREY BRIDGE.**—C. Williams, July 3: The 80 set to in a strong and



powerful lode, chiefly consisting of quartz, gossan, and solid stones of ore, but not in sufficient quantity to value. The Rake vein, in the engine sump (sump winze), under the 30, is 6 ft. wide, and worth for length of shaft 10 tons of rich lead ore per fathom. Fiddling's vein, in the 80 north-west, is 4 ft. wide, carrying a rib of ore on the heading side from 3 to 4 in. thick, solid. I am at present cross cutting east in the end to prove another branch, which I hope to find rich in ore. The tribate pitches, five in number, and worked by 18 men, are producing fair quantities of lead ore. The new machinery is working splendidly, and dressing operations are proceeding well; and, if all is well, I calculate upon raising 40 tons of lead ore, equal to about 20 tons of pig-lead, this month.

**PENHALLS.**—S. Bennett, P. Van, June 28: The lode in the 70 east end is somewhat larger than it has been, and of a most promising character, worth 10 to 15 tons per fathom. In the 60 east end the lode is small and unproductive at present. The lode in the rise in the back of the 40 west is slightly improved, and at present contains a small good leader of tinstuff, worth 50 per fathom. The winze below the 30 is producing some tinstuff, but not of much value.

**PENRUTHAL.**—W. Polkinghorne, July 3: The 34 driving east of High-burrow shaft the lode is still disordered by the cross-course, and at present not of much value. The stopes in the bottom of the 34, east of Highburrow shaft, the lode is large, being 6 ft. wide, and worth for tin 100 per fathom. All other bargains are without change since last reported.

**ROMAN GRAVELS.**—Arthur Waters, July 3: The new engine shaft is 9 fms. 1 ft. below the 110; ground of the usual character. The 110 north is forth to a small twined up lode corresponding to the ground seen in the 95. A few fms. north of present shaft is a very wide lode, which continues for 50 fms. beyond the old engine shaft, or 100 fathoms north of present forebrest. The 110 south is worth 1½ ton per fath. Winze below 95, north of shaft, is down 9 fms. 5 ft.; worth 2 tons per fath. The 95 south is suspended for the time, and the men put to rise against the winze coming down from the 80; lode worth 2 tons per fath. The said winze below the 80 (down 8 fms. 5½ ft.) is worth 1½ ton per fath. We are still cross-cutting east, close up to the 80 forebrest; have cut in 8 ft., but are not yet through the hanging wall part of the lode. I may say here that the footwall part of the lode is worth 2 tons per fath. The 80, north of shaft, is worth 1 ton per fath. The 60 south is worth 3 tons per fath. The 40 fm. level, north is worth 1½ ton per fath. The stopes generally are looking quite as well as for several months past. We sell 2-3 tons of lead ore on Saturday next.

**ROCKHOPE.**—Thos. Tonkin, July 3: Adit Level: Our stopes on side vein near boundary are improving for ore, and the yield is now 15 cwt. of ore to the fathom; the work is also rather better to get. The stopes on main leader near Gin shaft keep giving a yield of 10 cwt. of ore to the fathom. The stopes in the 15 on side vein, east of Low shaft, are easy to work, and the yield of ore is 10 cwt. to the fathom; 10 cwt. to the fathom is also the yield of the stopes on main leader near Gin shaft, but the ground is still and twined in places. The stopes above the 55 on the side vein are very easy to work, and the yield of ore at present is 8 cwt. to the fathom. The stopes beneath this level on the side vein, west of flat, are now yielding 10 cwt. to the fathom, and progress good. The stopes at pump-sump are easy to work, and the yield of ore 12 cwt. to the fathom. We will have a good run ore ground here. The drive above the 42 near Gin shaft is now rather twined, and the yield of ore 8 cwt. to the fathom; in a part of the stopes, however, of which this is the forebrest, we have had within the last few days ground yielding 22 cwt. of ore to the fath.; and, indeed, taking the mine on the whole, it looks better to-day than for many weeks past. We are now engaged in securing the rise from this level to the 25 on side vein, putting in hoppers, &c., so as to open up stopes both towards Low shaft and eastward also on the course of the vein. The dressing goes on as usual, and the machinery is in good working order.

**SOUTH CONDURROW.**—William Rich, William Williams, Henry Abraham July 2: The lode in the back of the 93 east is worth 250 per fathom. The 80 east end is letting out water freely; the lode is worth 80 per fathom. The 70 east is worth 60 per fathom. The rise in the back of this level is worth 200 per fath. The lode in the 70 west yields low-quality tinstone, but it has a better appearance, and looks likely to improve. The 60 south is worth 3 tons per fath. The 50 is worth 120 per fath. There is nothing new discovered in the 50 cross-cut north. The 50 west, on the north lode, is unproductive at present. The rise in the back of the 50, on the tin lode, is worth 120 per fath. The 50 east, east of King's, is worth 80 per fath. The rise in the back of this level is worth 120 per fath. There is nothing new to report in the 30 and the 40 east ends.

**SOUTH DARRIN.**—Henry James, July 3: The sinking of the shaft is progressing well, 4 ft. 3 in. being sunk during the past week; the lode carried in sinking continues to look very encouraging, producing good solid ribs of copper ore, with an improving mixture of lead ore. The lode in the 100 west is worth 2½ tons per fathom; the men from this end are still stopping a piece of the back, worth 2½ tons per fath. The two stopes in back, east of winze (No. 2), are worth together 3 tons silver lead ore per fathom for width of lode. We are preparing to sink a winze from this level to the 110. The lode in the 90 end is improving a little as we advance. No. 1 stop in back of this level is worth 1½ ton per fathom, and No. 2 stop 1 ton per fathom. The stop in back of the 80 is worth 1½ ton per fathom. The sinking of the winze in this level is progressing well. The 10 tons of silver lead ore sold June 27 realised 682½ lbs.

**SOUTH TOLCARENE.**—Wm. Rich, J. Knevel, July 2: We have cut through the cross-course in the 34 and east; the lode is out of by it. We shall probably have to drive a short distance north to intersect it. The rise in the back of the 34 is in easy ground, and the lode yields occasionally good stones of copper.

**TAMAR.**—R. Goldworthy, July 3: I am glad to tell you that we are making good progress in driving the 37 fm. level south. The lode is greatly improved, now producing saving work, and from its promising appearance we expect a further improvement daily.

**TANKERVILLE.**—Arthur Waters, July 3: The lode along the 220 east and west of shaft cross-cut is widening and improving. The 200 east is worth 1½ ton per fath. The 200 west is worth 1½ ton per fath. The winze below this level is worth 3 tons per fath. The stopes and other points are as for some time past.

We are delivering the ore as fast as our carriers can take it.

**TEESDALE.**—June 28: West End Forebrest: This working is nothing like as good as when I last saw it, though it carries its full width of vein, and is very mineral-like. Another back will make all the difference with it, though it is yet by no means a bad working. The west end stopes still continues with little or no alteration; some shots reveal very fair good ore, and others show it just as poor; it is being knocked down all together—poor and rich. There is much more better ore in the west end since last report the cross-cut, though the very much poorer at the time I saw it; we want to be 6 ft. higher up. There is little to report from the north end east, excepting that we have reached the old man, but there is a useful payable height left before us; the men have done well, and are likely to do so, at 30s. per bing. Two men are picking about among the old men's workings, where I think they will be able to realise more than will pay their expenses. Dressing is kept going, and is doing fairly well in producing lead ore. We could have accomplished 12 or 15 tons in addition to the 15 tons 6 cwt. sold to the London Lead Company. The west end forebrest has yielded more lead ore in the last 2 fms. driving than ever it has done before.

**TYN-Y-FELON.**—E. Jones, July 1: We are getting on with the kilns as fast as the weather will allow; the front walls are almost finished. We have got all our machinery, timber, &c., from Tylwyd Mine; we find it in very good condition, the flat and round boulders, hand-fits, and 12 ft. wheel especially. The weather is very unfavourable and wet, consequently the masons cannot work very regularly, but they are at every moment they possibly can. We have now a good stock of machinery for dressing blende and lead, and we hope as soon as it is erected to make such sales of ore as will give the shareholders satisfaction.

**VAUGHAN.**—July 3: The lode in the 80, west of winze, on south part of lode, the lode is from 9 to 10 ft. wide, yielding 1½ ton of lead ore per fathom. At present we have two men engaged in securing and repairing mouth of deep adit level, which is nearly broken down. The machinery is in good order, drawing, &c., progressing regularly with a full supply of water. Samples of 20 tons of silver lead ore were sent out yesterday (Tuesday), for sale on the 15th inst.

**WEST CRAVEN MOOR.**—David Williams, July 3: Blackhill Level: This level is extended east of New Blackhill shaft 9 fms. 2 ft., and is within about 20 fms. of being under the perpendicular of New West shaft, and within 14 fms. of the ore ground going down the winze below the 20. No. 3 stop in the back of the level, by two men, is worth 12 cwt. of lead ore per fath. New East Shaft: In consequence of the heavy rains of late we have not been able to continue the sinking below the 20 this week. We have commenced sinking a winze below the 20 upon No. 2 vein, which is 2 ft. wide, and producing 20 cwt. of lead ore per fath. A stop in the back of this level, by two men, is worth 15 cwt. of lead ore per fath. We have carried 20 tons of lead ore to the smeltmill.

**WEST VOR.**—B. Harris, July 3: I have been underground this morning, we are progressing very satisfactorily with the winze below the adit level, which is now down 5 ft.; the lode is 3 ft. wide, of a most promising appearance. I have assayed a sample from it this morning, which produced 14 lbs. of tin per ton of stuff. I hope to be able to sink several fathoms before winter sets in, which I think very important for our future.

**WEST WHEAL PEBYOR.**—W. T. White, July 1: Since the intersection of the Wheal Pebyor south lode at the 10 fm. level on Tuesday last we have opened on it, and find it to be about 4 ft. in width; the leading part of this lode is about 2 ft. wide, producing excellent quality tinstuff, quite as good I think as the sample previously taken—1 cwt. 1 qr. of black tin to the ton of tinstuff. The remaining 2 ft. consist principally of blende, which contains some good work for tin. We have about 10 tons of tinstuff drawn to surface, and shall open out level east and west from cross-cut, so as to make returns of tin. The discovery of such a valuable lode at such a shallow depth is of great importance, and judging from the present appearance I expect we shall open up some good ground at this and the next level. The engine-shaft is now in full course of sinking by 12 men to reach the 20 fm. level, where I am sanguine of finding even a better lode than we now have at the 10 fm. level. The appearance of the tinstuff is so much like that risen in Wheal Pebyor that it is not easy to see any difference, and there is no doubt of its being a continuation of the same run of tin ground as we have in that mine.

**WEST WHEAL TOLGUS.**—July 3: The lode in the 155, west of Taylor's shaft, is 3½ ft. wide, and yielding ¼ ton of copper ore per fathom. The ground is still very hard and spare for driving. The lode in the 145, west of shaft, is 4 ft. wide, and yielding 2 tons of ore per fath. The lode in the 145, east of No. 1 cross-cut, is 3½ ft. wide, and yielding ¼ ton of ore per fath, and the ground is more favourable for driving. The lode in the 135, west of shaft, is 2 ft. wide, and yielding good stones of ore. The lode in No. 5 winze, in the bottom of this level, is 1½ ft. wide, yielding a little ore, but not sufficient to value. There is nothing new to report in the value of any of the stopes in the mine—Richard's Shaft: The lode in the 95, west of shaft, is 5 ft. wide, yielding very good stones of ore, and letting out a large quantity of water. The lode in the 65, west of shaft, is 4 ft. wide, containing small branches of ore, and looking promising for an improvement.

**WHEAL GRENVILLE.**—T. Hodge, July 3: At Gould's shaft the sumpmen are engaged cutting ground for the feed-off bob at the 140 fm. level. There is no change in the 165 since my last. The lode in the 160 east end is not looking so well; present value 50 per fathom; ground driven during the past four weeks 5 fms. 1 ft. 4 in. Angelo's winze, sinking below the 140, is down about 4½ ft., the lode in which is worth 100 per fathom; the water here is too powerful for manual labour, therefore we are compelled to suspend operations until it is drained by the level below. The 140 east end is worth 80 per fathom. The 150 has been entirely drained this level. The stopes on the whole are turning out much the same as usual.

**WHEAL RUSSELL.**—John Bray, July 3: The lode in the rise above the 25 is 3 ft. wide, producing rich stones of copper, bursting with water strongly mineralised. The lode in the 25 end is 1 ft. wide, spotted with mussels and copper looking favourable.

**WHEAL UNY.**—William Rich, Matthew Rogers, June 28: We have commenced the old engine shaft with the rise in the back of the 170, and have fixed the

skiproad complete to the bottom of the mine. We are urging on the 170 west by six men; the lode in the end has a kindly appearance, and yields a little tin. The lode is good in the bottom of the 160, and we hope to have the same run of tin ground in the 170 west. The 160, east of Gooding's, yields a little tin, and the ground is easy for driving. The lode in the 160, west of incline-shaft, is worth 90 per fath. The 130 and west carries stones of tin. The 130 east is worth 50 per fath.

### THE ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY (LIMITED).

**DIOS PADRE.**—Capt. N. C. Moreno, April 21: The end driving north from Cruz Verde shaft has passed into the Dios Padre sett. The character of the lode is much as usual. The ley from the end and stopes has improved a little of late.

**April 28.**—The end driving north produces a little green ore, but not sufficient to pay the expenses of driving at present. As the level advances further into the sett we shall look for it to improve. The natives speak of ore being left a little ahead of our present end.

**May 5.**—The end driving north is much the same as when last reported.

**May 12.**—The lode in the end driving north has some good stones of green ore. The stopes above this level is a little poorer than for some weeks past.

**MINA GRANDE.**—April 21: The 12 fm. level, driving north, has a very good appearance, some fine stones of ore being met with. The black ore stopes below tunnel level still maintains its productiveness and splendid appearance.

**April 28.**—The 12 fm. level, driving north, is yielding some very fine stones of galena and black ore. The present appearance is very encouraging. The big black ore stopes below tunnel level is looking as well as it is wont to do.

**May 5.**—In the 12 fm. level, driving north, the lode has changed its gangue from quartz to felspar. The present value of the end is about 1½ ton per fathom. If the large course of ore above inclines to the north and west, as every indication declares it does, we ought soon to cut it in this end.

**May 12.**—The lode in the 12 north has continued to improve, now worth 5 tons of black ore per fathom. The lode consists of galena, black copper ore, and a little blende. There is not much doubt we are in contact with the same course of ore coming down from the big black ore stopes below tunnel level.

**LA VIRGEN, EASTWARD.**—April 21: The stopes in the back of tunnel is fairly productive of green ore, and bids fair to continue so. The stopes between the tunnel level and the 10 fm. level, on the Virgen branch, is producing black ore in fair quantities. A cross-cut of a few feet east at the 10 fm. level has cut through the same branch. It is about 4 ft. wide, and intact to the tunnel level as well as below it. We shall drive a little on its course to prove it. It does not contain at present ore in sufficient quantities to pay the expense of driving.

**May 5.**—The stopes above the tunnel level, on the green ore, continue the same as for some time past. The black ore stopes between the tunnel and the 10 fm. level is still productive of black ore in paying quantities.

**May 12.**—There is not much doing in the green ore stopes above tunnel level. At present it is being filled up with debris, in order to keep the sides open, which are weak and dangerous. The stopes below tunnel on the black ore part of the lode is much as usual.

**LA PROVIDENCIA.**—April 21: This stopes has undergone no change worthy of notice. It is fairly productive of green ore, and always shows more or less petanque.

**April 28.**—The stopes is much as usual as regards productiveness in green ore. It has, however, of late been giving some very fine stones of rich black ore, and a little petanque dispersed throughout.

**May 5.**—The big green ore stopes above tunnel level has undergone no change worthy of notice. It is as productive as usual.

**May 12.**—The old stopes continues much as it has been for some time past. It is not rich, nevertheless it yields metal in paying quantities.

**SAN PEDRO.**—April 21: The communication to the new rise from this stopes is complete. The ventilation is perfect. Stopping is commenced in the back of the old green ore left in former workings. We anticipate this old stopes will yield us a large quantity of good green ore.

**April 28.**—Last week we started this old stopes to have been put in communication with the new rise from tunnel level, and the ventilation to be good. We have now to state that we are fully abreast with all the old stopes left by former workers. Stopping has been commenced, and I am pleased to say a very good lode has been left for us to operate on. The height of the stopes from tunnel level is 70 ft. By our clearing into and securing this part of the mine—although with a great deal of danger and trouble attending it—our green ore department has very materially improved.

**May 5.**—This stopes is looking very well; indeed, it is our best green ore stopes in the mine. Our hopes in regard to this part of the mine have been fully realised.

**May 12.**—The stopes is much as usual. We are filling up the old workings, and making everything secure, which will enable us shortly to attack it with great vigour.

**FIRST LODE.**—April 21: There has been but little done here of late. The lode is of little value in the present stopes.

**May 12.**—There is nothing doing at present, as it produces chiefly second-class ore, of which we are not in need just now, as the other stopes afford us a greater supply than the mill can dispatch in its present bad state.

**J. H. Jones, May 8.**—Underground: The chief points of interest just now are the San Pedro ore chamber and the 12 fm. level, Mina Grande. As the former we have a stopes much better than we had anticipated finding. The 12 going north (Mina Grande) shows a very kindly end, and we hope soon to be in good pay ore.

**May 9.**—We inspected the whole mine on Saturday last, and are pleased to report that all the ore chambers show a more pleasing aspect than for some time past. The 12 fm. level end (Mina Grande) has improved 25 per cent. since Saturday last, and has every appearance of being about to reach the main ore chimney. The San Pedro stopes is looking well.

**May 14.**—The 12 fm. level (Mina Grande) has reached the main ore chimney; nearly all the end of this level is in ore. The San Pedro maintains its favourable appearance. A great deal of fair milling ore may be expected from these two places.

The directors have received the following telegrams from Mr. Clemes, dated respectively May 21 and June 6:—"I have remitted you £4500, bullion \$5200; and "I have remitted you bullion \$2100, ore \$3750."—May 21: "Drought causes scarcity of water in reduction works."

### FOREIGN MINES.

**ST. JOHN DEL REY.**—Telegram from Morro Velho, dated Rio de Janeiro June 23: Produce nine days, second division of June, 10,350 cits.—39711; yield 6 cits. per ton. Letters received, dated June 2—All going on well.

**RICHMOND GOLDMINE.**—Telegram from the mine at Eureka, Nevada: Weekly run, \$55,000, 93 tons of refined gold, \$45,000.

**R. Rickard, June 11:** Since my last there is no particular change to mention in the different workings of the mine. The 200 cross cut has been advanced 14 ft.; the ground in the present is somewhat more favourable for drifting. The 400 on quartzite has been drifted 27 ft., without any change in the ground. The 500 north cross-cut has been drifted 27 ft.; the present end is in hard limestone. A drift has been started to explore the ground standing between the 600 north cross-cut—the 600 north on fissure; during the past week it has been drifted 30 ft.; the present end is in favourable ground for drift. The 600 west drift has been advanced 11 ft.; this drift is still in very hard limestone, consequently slow progress is being made. The 900 north cross-cut is still in shale; during the past week it has been drifted 29 ft. Work in the 900 main west drift has been resumed, and has been drifted since my last 14 ft. On the whole, the chambers are looking about the same, and are turning out the usual quantity of fair grade ore. The machinery both in mine and smelting works is in very good working order.

**OREGON.**—F. Ennis, June 10: The clean-up for May was 114½ ozs., which I have shipped to mint; will net about 20000. Cost-sheet for same month \$267.68. If water was not carried until too low to do profitable washing it will do so thing by the 15th, when bed-rock will be cleaned in, which will take something like six weeks to complete.

**BLUE TENT.**—D. T. Hughes, June 7: We have nothing in particular to report this week, except that we have not washed as much time as heretofore at the South Yuba claim, owing to a large number of rocks and cement chunks being thrown in front by blast.

**Telegram, July 3.**—Clean-up \$20,000.

**FRONTINO AND BOLIVIA.**—The statement of profit and loss for the month of April shows a profit of 2500 fms. The ordinary set at the mine during the month has been increased by 218 fms. The details of which are given in Mr. White's report. The reports from Mr. Robert White are highly satisfactory, inasmuch as they show conclusively that, while Mr. White is making fair profits, he is laying out the mines in a way to increase their output both permanently and largely; looking to the stoppage caused by the floods at the Silencio Mine in March last, and to the fact that the present month (April) comprises the Easter week, which is holiday time with the miners, the profit is more than might have been expected. It will be noticed that the Silencio Mine was, on May 3, unwatered as far as the 43 ft. level. Mr. White makes no mention of any revelation, it may therefore, be assumed that the rumours on that head are without any foundation.

**ANTIOQUIA (Frontino).**—The statement of profit and loss for the month of April shows a loss of 250 fms. In addition to the monthly cost of 3900 fms., the sum of 880 fms. has been spent on capital account. The reports show that with the expenditure of a little more capital the mines will be brought into a paying condition. Mr. Franklin White will arrive in England about the end of this month.

**EBERHARDT AND AURORA.**—Frank Drake, June 10: Progress Statement of Eberhardt Drift for two weeks ending June 7: The total length of drift on May 24 was 894 ft., and the distance run for two weeks ending June 7 is 54 feet, making the total length of drift to June 7 978 ft. I can note no special change more than that we have run out of the shaley material which has been so very amazing to us. We have at this date a larger amount of spar mixed with the limonite than we have seen in the entire length of the drift; whether this change will prove favourable or not only remains to be proved by further driving. I am anxiously waiting for letter of instruction from the directors, as promised in their cablegram of May 29. I enclose a rough tracing, showing point of our present workings.

**ISABELLE (Gold and Silver).**—Lewis Chalmers, June 9: We were making fair progress in the tunnel, considering that one of the shifts was wholly untrained to the use of the drills, when with scarcely any warning almost the whole force struck, because the untrained hands were not getting the same pay as those who were skilled in their use. To have given in to a demand like this was virtually to lose control of the mine and men. I, therefore, refused, paid the strikers off, and sent one of my shift bosses to Plymouth for trained drillmen. I expect him upon Friday or Saturday with a full crew, so I hope this will not occur again; meanwhile I am running one shift. The following is the foreman's report:—"I herewith submit my report for the week ending June 7. Total distance from monument to the face of tunnel, 363 ft.; distance run for the week, 41 ft. Started machines on June 2, and being close to the timbers were obliged to put in shallow holes to protect timbers from being out and knocked out. My men with the exception of four were all green men with machines, and (as you are aware of the strike for more wages, and the men paid off) is the cause of my not being able to report better progress. I am running one shift of men, and arrangements are made to have both shifts full in eight days. Ten are, and are not so remote from any works where a number of men are employed that we labour under great difficulties in that respect, and the experience of all who have used machines in drilling have had more or less trouble in getting the right kind of men. In the cablegram of May 29, I stated that the first week they started machines they ran 37 ft., and

thought they done remarkably well; they increased in distance as the men improved on the machines in experience till they got up to 300 ft. per month, and I am satisfied we can do as well as Suro in distance, and a great deal better in cost per foot.

**BUENA VENTURA.**—June 25: In No. 1 shaft, below the 25, the men are getting on well with the sinking, and are doing over preparatory work for the setting of a plunger-lift. The lode in the 25, east of No. 1 shaft, is getting well settled than it was, and is yielding fine lumps of ore, worth ½ ton per fathom. In the 25, west of No. 1 shaft, the lode is of a promising appearance, consisting of calcareous spar, clay, and lead ore, valued at 1½ ton per fathom. In the 25, east of No. 2 shaft, the lode is small, containing a few spots of ore, but nothing to value. No. 3 shaft, below the 25, has been sunk the necessary depth for a fork. In the 25, north of No. 3 shaft, good progress is being made.

**LENARRES.**—June 25: The lode in the 115, east of Warner's, is large and strong, consisting chiefly of carbonate of lime, and yielding good stones of ore, valued at ¼ ton per fathom. In the 135, south of Pell's, the men are doing good labour. The lode in the 120, west of Pell's, is improving, worth 2 tons per fathom. In the 90, west of Pell's, the lode is disordered by strong cross joints. The lode in the 130, east of Pell's, is compact and regular, and of a promising appearance, yielding 1 ton per fathom. The 105, east of San Francisco, is opening up a good length of stopping ground, valued at 1 ton per fathom. No. 299 winze below the 100, continues unproductive. In the No. 231 winze, below the 90, the lode is improving, worth 1 ton per fathom. Quilentes Mine: The present end of the 100, east of Taylor's, is a large cross-course; we hope to find the lode on the eastern side of it shortly. In the 90, east of Taylor's, the lode is very easy, and yielding good stones of ore. The lode in the 80, east of San Carlos, is falling off, but still yielding ¼ ton per fathom. In Buzza's winze, below the 80, the lode is not so productive as it was, now worth 1 ton per fathom. The lode in boundary winze, below the 80, is small, but very compact and regular, producing ¼ ton per fathom.

**FORTUNA.**—June 25: Canada Inco's: In the 120, west of O'Shea's, the lode is compact and regular, producing very good stones of ore, valued at ¼ ton per fath. In the 50, west of Abercrombie's, good spots of ore have been met with in the past few days, but not enough to value. The lode in the 60, west of Abercrombie's, is regular and well defined, consisting of carbonate of lime and good stones of ore, worth ¼ ton per fathom. In the 50, east of Abercrombie's, the lode is soft and speedy for driving through. The 70, west of San Pedro's, continues to open a very promising stopping ground, yielding 1 ton per fathom. In the 80, west of San Pedro's, there is a large strong lode, producing ¼ ton per fathom, and promises further improvement. The lode in the 80, east of San Pedro's, is small and valueless, and the ground very hard. In the 70, east of San Pedro's, there is a very promising lode, worth 1 ton per fathom; and there is no doubt a good lode for some distance in advance of the present end. The lode in the 120, east of O'Shea's, is very large, with spots of lead ore disseminated throughout, valued at ½ ton per fathom. In the 100, west of Lowndes's, the lode is larger, but is entirely destitute of ore. The lode in the 100, east of Lowndes's, is small, but regular, and yielding some good stones of lead ore, worth ¼ ton per fathom. In the 90, east of Caros, no improvement worthy of notice has taken place. Canuto's winze, below the 70, is being sunk in a fairly productive lode, yielding 1 ton per fathom. Juan's winze, below the 90, is a new winze, in advance of the 100, east of Lowndes's; lode worth 1½ ton per fathom. Luis's is also a new winze; it is being sunk below the 40, east of Abercrombie's, and will doubtless lay open good stopping ground; its present value is ¼ ton per fathom.

**Los Salidos.** The 160, west of Taylor's, continues to open up fairly productive ground, worth 1 ton per fathom. In the 160, east of Taylor's, the lode is compact and regular, and has a very promising appearance, valued at 1 ton per fathom. The lode in the 145, east of Taylor's, continues without change, worth ¼ ton per fathom, but the ground is harder. In the 130, east of Taylor's, some good spots of lead ore have been met with in the past few days. The lode in the 130, east of San Pablo's, is large and fine, and producing 3 tons per fathom. This level is laying open some very rich stopping ground. In the 110, east of San Miguel, the lode has fallen off in value, but still worth ¼ ton per fathom; the ground has become harder. In the 80, west of Palgrave's, branches are continuing to meet with the whole of which are valueless. The lode in the 80, east of Palgrave's, is large, containing carbonate of lime, quartz, and lead ore, but not much of the latter to value. In Taylor's engine shaft, below the 160, very good progress is being made with the sinking; lode worth 2 tons per fathom. Linares winze, below the 130, has been holed to the 145. Eusebio's winze, below the 120, is being sunk in advance of the 130, east of Taylor's engine-shaft; the lode is yielding 2 tons per fathom.

**ALAILLOS.**—June 25: In the 20, west of San Felipe, the lode fell off in value a few days ago; its present worth is 1½ ton per fathom. The lode in the 160, west of Taylor's, is large, and it is producing a little lead. In the 115, west of Taylor's, the lode is strong, and it has a promising appearance, valued at ¼ ton per fathom. The lode in the 100, west of Taylor's, does not contain any ore. In the 85, west of San Adriano, the lode is producing good stones of ore. The lode in the 80, east of San Victor, is yielding good lumps of ore, worth 1 ton per fathom, and we expect further improvement. In the 70, east of San Victor, we have not yet intersected the lode east of the cross-course. The lode in the 70, west of San Victor, is hard and unproductive. In the 40, south of San Carlos, nothing of value has been found since the last report. The 80, east of Judd's, cross-cut, is opening a good length of paying ground, valued at 1 ton per fathom. In the 70, west of Judd's shaft, the lode is small, and of no value. The lode in Fernandez winze, below the 85, has somewhat improved in appearance. In Prim's winze, below the 40, the lode is large, and it contains more ore, worth 1 ton per fathom. The lode in Campo's winze, below the 50, is large, producing good stones of ore, valued at ¼ ton per fathom.

### AUSTRALIAN MINES.

**YORK PENINSULA.**—The directors have advised from the committee of inspection at Adelaide, with reports from the Kurilla Mine to May 12. The following are extracts from Capt. Anthony's report:—"Kurilla Lode: The 55 fm. level is driven about 46 fathoms east of Hall's shaft. I anticipate reaching the ore gone down in the 45 by the end of the present month, but on re-measuring the ground I find the hauling shaft is 74 fathoms from Hall's shaft, the ore dipping at an angle of 45° westward, it should be met with 54 fathoms east of Hall's at the 55, so that we have yet about 8 fathoms more to drive, and it will take to about the end of June to reach the bunch. In the 45, at a spot a little east of the end of the 55, a winze is sunk 7 fms. 2 ft., with the object of ventilating the drive, &c., but the influx of water is so great that I have been obliged to let it stand (after boring a hole 10 ft. to let down the water when the level is driven under it). In the meanwhile I have put the men to sink another winze further east, without prejudice to the work on the 45, as this latter will go down in the ore ground. As yet the winze is 10 fms. 4 ft. deep, and will materially assist the return of ore. We began to sink this shaft below the 30 a year ago, and have during the year sunk 13 fathoms, but the shaft, and fixed pitwork and skiproad, and driven 23 fathoms at the 43, laying open for stopping, after deducting the level, about 275 fathoms of lode, which I hope will yield 800 tons of 17 per cent. ore. The western ground will not be open for stopping until the winze for which tenders are called is sunk to the 43. We have 26 men employed on tribute work on this lode, at an average of 7s. 6d. in li.—Ore Returns: On hand at the mine, 355 tons of 14½ per cent., 500 tons of smalls of 5 per cent., and 1940 tons of ledge ore of 5 per cent.; 100 tons of 17 per cent. ore have been sold in the colony."

**SCOTTISH AUSTRALIAN.**—Sydney, May 1



the rate of 20 per cent. per annum, were sold at 7l. per share, representing a premium of 250 per cent. upon the amount of the paid-up shares.

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### The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, JULY 4, 1879.

IRON.	£ s. d.	£ s. d.	TIN.	£ s. d.	£ s. d.
Fig. sm. f.o.b., Clyde.	2	0	10	—	—
Scotch, all No. 1.	2	0	10	—	—
Scotch, all No. 2.	2	0	10	—	—
Scotch, all No. 3.	2	0	10	—	—
Scotch, all No. 4.	2	0	10	—	—
Scotch, all No. 5.	2	0	10	—	—
Scotch, all No. 6.	2	0	10	—	—
Scotch, all No. 7.	2	0	10	—	—
Scotch, all No. 8.	2	0	10	—	—
Scotch, all No. 9.	2	0	10	—	—
Scotch, all No. 10.	2	0	10	—	—
Scotch, all No. 11.	2	0	10	—	—
Scotch, all No. 12.	2	0	10	—	—
Scotch, all No. 13.	2	0	10	—	—
Scotch, all No. 14.	2	0	10	—	—
Scotch, all No. 15.	2	0	10	—	—
Scotch, all No. 16.	2	0	10	—	—
Scotch, all No. 17.	2	0	10	—	—
Scotch, all No. 18.	2	0	10	—	—
Scotch, all No. 19.	2	0	10	—	—
Scotch, all No. 20.	2	0	10	—	—
Scotch, all No. 21.	2	0	10	—	—
Scotch, all No. 22.	2	0	10	—	—
Scotch, all No. 23.	2	0	10	—	—
Scotch, all No. 24.	2	0	10	—	—
Scotch, all No. 25.	2	0	10	—	—
Scotch, all No. 26.	2	0	10	—	—
Scotch, all No. 27.	2	0	10	—	—
Scotch, all No. 28.	2	0	10	—	—
Scotch, all No. 29.	2	0	10	—	—
Scotch, all No. 30.	2	0	10	—	—
Scotch, all No. 31.	2	0	10	—	—
Scotch, all No. 32.	2	0	10	—	—
Scotch, all No. 33.	2	0	10	—	—
Scotch, all No. 34.	2	0	10	—	—
Scotch, all No. 35.	2	0	10	—	—
Scotch, all No. 36.	2	0	10	—	—
Scotch, all No. 37.	2	0	10	—	—
Scotch, all No. 38.	2	0	10	—	—
Scotch, all No. 39.	2	0	10	—	—
Scotch, all No. 40.	2	0	10	—	—
Scotch, all No. 41.	2	0	10	—	—
Scotch, all No. 42.	2	0	10	—	—
Scotch, all No. 43.	2	0	10	—	—
Scotch, all No. 44.	2	0	10	—	—
Scotch, all No. 45.	2	0	10	—	—
Scotch, all No. 46.	2	0	10	—	—
Scotch, all No. 47.	2	0	10	—	—
Scotch, all No. 48.	2	0	10	—	—
Scotch, all No. 49.	2	0	10	—	—
Scotch, all No. 50.	2	0	10	—	—
Scotch, all No. 51.	2	0	10	—	—
Scotch, all No. 52.	2	0	10	—	—
Scotch, all No. 53.	2	0	10	—	—
Scotch, all No. 54.	2	0	10	—	—
Scotch, all No. 55.	2	0	10	—	—
Scotch, all No. 56.	2	0	10	—	—
Scotch, all No. 57.	2	0	10	—	—
Scotch, all No. 58.	2	0	10	—	—
Scotch, all No. 59.	2	0	10	—	—
Scotch, all No. 60.	2	0	10	—	—
Scotch, all No. 61.	2	0	10	—	—
Scotch, all No. 62.	2	0	10	—	—
Scotch, all No. 63.	2	0	10	—	—
Scotch, all No. 64.	2	0	10	—	—
Scotch, all No. 65.	2	0	10	—	—
Scotch, all No. 66.	2	0	10	—	—
Scotch, all No. 67.	2	0	10	—	—
Scotch, all No. 68.	2	0	10	—	—
Scotch, all No. 69.	2	0	10	—	—
Scotch, all No. 70.	2	0	10	—	—
Scotch, all No. 71.	2	0	10	—	—
Scotch, all No. 72.	2	0	10	—	—
Scotch, all No. 73.	2	0	10	—	—
Scotch, all No. 74.	2	0	10	—	—
Scotch, all No. 75.	2	0	10	—	—
Scotch, all No. 76.	2	0	10	—	—
Scotch, all No. 77.	2	0	10	—	—
Scotch, all No. 78.	2	0	10	—	—
Scotch, all No. 79.	2	0	10	—	—
Scotch, all No. 80.	2	0	10	—	—
Scotch, all No. 81.	2	0	10	—	—
Scotch, all No. 82.	2	0	10	—	—
Scotch, all No. 83.	2	0	10	—	—
Scotch, all No. 84.	2	0	10	—	—
Scotch, all No. 85.	2	0	10	—	—
Scotch, all No. 86.	2	0	10	—	—
Scotch, all No. 87.	2	0	10	—	—
Scotch, all No. 88.	2	0	10	—	—
Scotch, all No. 89.	2	0	10	—	—
Scotch, all No. 90.	2	0	10	—	—
Scotch, all No. 91.	2	0	10	—	—
Scotch, all No. 92.	2	0	10	—	—
Scotch, all No. 93.	2	0	10	—	—
Scotch, all No. 94.	2	0	10	—	—
Scotch, all No. 95.	2	0	10	—	—
Scotch, all No. 96.	2	0	10	—	—
Scotch, all No. 97.	2	0	10	—	—
Scotch, all No. 98.	2	0	10	—	—
Scotch, all No. 99.	2	0	10	—	—
Scotch, all No. 100.	2	0	10	—	—

At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1X 6s. per box more than 10 quoted above, and add 6s. for each X. Terms—plates 2s. per box below tin-plates of similar brands.

**REMARKS.**—Since our last report there has been scarcely any change in the general condition of our market. Sellers of most metals have fairly maintained their quotations, but the demand does not improve, and the trade generally has fallen again into a state of inactivity. Business during the remainder of the year will depend in some measure upon the result of the harvest, although at the moment it is not expected by some persons that a very prolific harvest will be forthcoming this year, nevertheless it is to be hoped these expectations will not be realised, but that a plentiful harvest, together with a revival in trade, may ensue. The long depression which has prevailed during the last three or four years has been caused partly by the repeated deficient harvests, combined with the disastrous famines which took place in India and China, the former greatly affecting the home markets, and the latter seriously checking the progress of the export trade. Although these have been material impediments, still they have not formed the chief causes, for the main reasons have evidently been the political disturbances, and also the foreign repudiations of State loans. The reality which has since come to light respecting the issue of foreign loans has produced a curtailment of credit to foreign Governments, which has put an immediate stop to many of their schemes and wild undertakings. The commercial circle is, therefore, suffering from the greater caution now exercised in financial circles, but, although these restrictions of trade are attended with distressing circumstances to the working classes, yet it is to be hoped they will prove but temporary, and that business will be placed upon a sounder basis than hitherto.

The British public have too often been defrauded by foreign Governments promising to pay a slightly better interest for money beyond that to be obtained by investment in British and colonial securities; but in the majority of instances it has been proved that the promises made were not worth the paper they were written upon, and that the real cause or evil to the traders with those nations who have forfeited their reputation and credit by entering into fraudulent and swindling transactions for the mere purpose of drawing money out of the pockets of credulous lenders. Seeing the utter demoralisation of many foreign Governments, it is not surprising that the taint should extend to the commercial communities of those countries; and, as a contraction of credit means a contraction of business, it is only natural that there should be a considerable falling off in commerce with those nations which have acted so dishonourably in the past, and proved themselves so utterly unworthy of our confidence. The only way to wipe out a disgraceful abuse of trust is to make the best possible amends, and in order to do this the greatest sacrifices should be submitted to to redeem the national honour and credit.

**COPPER.**—The alterations which have taken place in this market during the week have been of a trifling character, and sellers, though maintaining their quotations, have not succeeded in obtaining any enhanced value. It is satisfactory to be able to state that, according to the statistics published on the 1st inst., the total visible stock has been diminished by 1529 tons, and it now amounts to 54,839 tons, against 56,468 tons on June 1. Nevertheless, although it is well for the trade that a reduction should have taken place, the fact should not be overlooked that the stock on June 1 was by far the highest on record, and therefore the large quantity which is still left for disposal is a great deal above what it should be to allow of higher rates yet a while. The deliveries of Chili copper were very good during the last fortnight of June, being 2575 tons; but it is to be regretted that for the same time the imports exceeded them, and are reported to have been 3333 tons. The total stock of Chili produce in Liverpool and Swansea is said to be 29,776 tons, against 29,318 tons the 14th inst. On the whole, these statistics are tolerably satisfactory, for although the diminution which has taken place is small, yet the previous returns have for so long past shown the stock to be on the increase, that it is encouraging to find that it has begun to take a downward turn; and as the charters of late have been light, it is not improbable that if they so continue, and the deliveries are maintained, that the next statistics may be still further lessened, and thus afford sellers an opportunity of obtaining higher prices.

**IRON.**—This market remains very quiet, and no alteration has taken place in quotations. The demand keeps most inactive, and only but a limited number of orders are received by the ironmasters. All the works, or with only but few exceptions, are suffering very much from want of employment, and more mills are again reported to have been closed through the continued increase in the depression; and thus many hundreds of hands find themselves entirely void of employment. It is reported from Sheffield that serious depression prevails in this district; and, although a slight improvement has set in for other descriptions of commerce, there is no least indication of any improvement in the iron trade, and there seems little prospect of any increase in business taking place for some time to come. The home demand is said to be slightly weaker, and that for shipping account remains unaltered. The markets in this district display a most inauspicious appearance, on account of trade being entirely void of speculation. It is thought by some that a slight improvement has set in with the trade with America, and owing to the reduced cost of production the Sheffield makers are enabled to compete on more favourable terms. Although orders are still scarce from this country, they are reported to be more numerous than they were last year.

The returns from Newport are unsatisfactory, and to show the enormous losses now attending production, the losses incurred in the output of the Rhymney Iron Company and the Ebbw Vale Iron Company during the last year have been quoted. The former works made a loss in producing of nearly 38,000l., and the output diminished from 40,665 tons in 1878, to 10,144 tons in 1879, and it is worthy here to remark to show how steel in taking the place of iron that during the same period the output of steel rose from 775 tons to 32,315 tons. The total loss of the Ebbw Vale Works in producing is said to be about 42,000l. The clearances from this district keep limited, the chief having been made to India. Sellers continue to quote at previous rates. The ironmasters at Leeds are said to be most indifferently employed, though it is said that the demand for best Yorkshire brands has been rather more active, nevertheless prices have in no way improved. The enquiries for manufactured iron are scarce at last week's figures. The Middleborough market keeps very dull, and business transactions remain most limited, and prices are becoming weaker, makers now quoting No. 3 at 38s., and No. 4 at 32s. to 32s. 6d. These continued diminished prices are not surprising, as the statistics published on the 30th inst. show that the stock is increasing, the total stock in Messrs. Connell and Co.'s stores there on that date being 79,249 tons. The deliveries of pigs to German ports are said to have been fairly maintained, but those to other countries remain unsatisfactory, and the shipments to Scotland are said to be below the average. Stocks are expected shortly to increase still more as the demand does not improve, and further than this, the Cleveland furnaces have got in regular blast again, so unless some improvement in trade soon sets in the output will probably be above the requirements.

The manufactured trade keeps quiet, the greater portion of the orders which come to hand being for ship-plates, which are chiefly executed at 4l. 17s. 6d. to 5l. per ton. Contracts for bars have been executed at 4l. 15s. per ton, and angles at 4l. 17s. 6d. per ton. The experiments of making steel from Cleveland iron is said to be progressing satisfactorily, and hopes are entertained that in the future this new process may prove a very prosperous business. The Glasgow warrant market having closed very dull last week opened slightly firmer on Monday, and a

limited number of transactions are reported at 40s. 9d. to 40s. 10½d. for cash parcels, and during the week the market has shown little change, to-day's price being 40s. 10d. per ton. The demand for makers' iron keeps quiet at previous rates. The statistics published on the 30th ult. by Messrs. William Connell and Co. are most unsatisfactory, for they show that the stock is continually increasing, the total quantity now in store in Glasgow amounting to 276,802 tons, which is an increase for the month of 10,334 tons. Warrants are reported to be in circulation for 285,445 tons.

For the week ending June 29, 1878.....	Tons	7,175
For the week ending June 28, 1879.....	Tons	7,074
Decrease.....		101
Total increase for 1879.....		52,978
Imports of Middleborough pig-iron into Grangemouth:—		
For the week ending June 29, 1878.....	Tons	6,454
For the week ending June 28, 1879.....	Tons	4,310
Decrease.....		2,144
Total decrease for 1879.....		32,401

In blast June 28, 1879..... 88  
 In blast June 29, 1878..... 94

**TIN.**—This market remains very quiet, and notwithstanding the reduction which has taken place in prices the market keeps very dull, for the business transacted is wholly for consumption. The total stock for June is reported to have diminished by 220 tons, and is now estimated at 17,211 tons, against 17,431 tons on May 31, and 16,776 tons on June 30, 1878. The deliveries show little change, and remain fairly satisfactory, being 1874 tons, against 1881 tons on the last day of May. The shipments from both Straits and Australia have increased, there being from the former 260 tons, against 210 tons in May, and from the latter 600 tons, against 328 tons for the same period. The price of landing tin is 64l. 10s. to 64l. 15s.; spec parcels, 65l. to 65l. 5s. In the absence of demand the latter will probably give way.

**LEAD.**—This market remains depressed, and buyers keep most inactive. Quotations, however, show no alteration, but although they are extremely low they offer no inducement whatever to purchasers to effect contracts of any magnitude.

**SPELTER.**—A limited business is transacted at rather firmer rates. Enquiries for both hard and Silisian come to hand very slowly.

**STEEL.**—Orders are scarce, and sellers at times are slightly easier in their quotations.

**TIN-PLATES.**—A fair business is doing, but at slightly reduced rates, IC coke of good brands having been sold by makers at 15s. per box, free on board London.

**QUICKSILVER.** continues in the same inanimate condition. The price is still 6l., but there is scarcely any demand.

**Messrs. FICKLEY and ABELL—GOLD:** There is no demand for any description of gold for export, and further amounts have been sent into the Bank. The arrivals have, however, been small, and the total so disposed of is only 87,000l. The Nizam brought 43,250l. from India, the Minho 6100l. from the Brazils, and the Nile 40,000l. from the West Indies; total, 89,350l. **SILVER:** A better demand has been experienced since our last, and prices have improved. The silver by the Pacific steamer was sold at 51½d. per ounce, showing a rise of ½d. on previous rates, and a still better value was obtained for the quantity by the West Indian steamer, which was placed at 51½d. on Wednesday. On the result of the tenders for the Indian Council drafts becoming known a further improvement took place, and a few small amounts realised, late in the afternoon, 53d. per oz. The market is now almost bare of silver, and our quotations are nominal, 52½d. being the last price. We have received during the week 38,000l. from the Pacific, 49,400l. from the West Indies, 45,000l. from Germany, and 40,000l. from New York; total, 172,400l. The P. and O. steamer leaving to-day takes 35,000l. to Bombay.

**Messrs. FRENCH and SMITH—COPPER:** Moderate charters and a good consumption demand at home have kept the market steady, and Chili bars are saleable at 15s. per ton higher than at the close of last month. Charters for first half of June were advised as 1300 tons. We quote Chili bars 55l. 15s., Wallaroo 62l. 10s., tough 60l., manufactured 65l. 10s. to 66l. ore and regulus 10s. 9d. to 11s. 6d. per unit. **TIN:** There was a large consumption during the past month, but an entire absence of speculative buying caused the market to appear very lifeless, and prices had a downward tendency. The statistics this month show a decrease in the available supply, but in other respects present no special feature. English tin was sold at lower rates, ingots being now quoted 6l. The Billiton Company announced that up to April, 1880, they will continue to hold bi-monthly sales, at each of which 13,000 piculs (780 tons) will be offered instead of 12,000 piculs (728 tons), as previously this year.

**Messrs. JAMES, FRAY, and Co.—COPPER:** held a very steady course, and prices have been well maintained for all descriptions. Chili bars are firmly held, and are quoted from 10s. to 20s. a ton dearer. The Cape ores sold by tender yesterday averaged about 10s. 10d. per unit, which is the same price as that realised a month ago. Iron continues heavy for all kinds. Tin has ruled flat, and without any particular quantities offering for sale, there is a fall in price of about 30s. per ton all round. Spelter, too, is again somewhat lower. Lead in small demand, and slightly easier to buy. Tin-plates quiet, but steady in quotations.

**Messrs. BROOKER, DORE, and Co.—IRON:** We have no improvement to report as having taken place during the past month; in fact, generally speaking, the markets have been even more depressed, and prices have still shown a downward tendency. The decline in prices of pig-iron, consequent upon the termination of the Durham strike, has not been arrested. Middleborough No. 3 being now quoted at 38s. (the minimum price at which they stood prior to the strike), and Scotch Warrants at 40s. 9d. In FINISHED IRON prices are a shade lower, except for best makes of South Staffordshire, which remain at 8l. 6s. per ton for bars, delivered f.o.b. London. It is thought that no alteration will be declared at the Quarterly Meeting to be held next week, but as Swedish iron can now be bought at the price asked by the list houses, and good second-class makes are procurable at 8l. 15s., or 30s. below the list price, we think another reduction will yet have to be made by the leading South Staffordshire makers if they wish to retain their trade. **TIN-PLATES:** Although prices for common makes have somewhat dropped, demand continues good for best makes of charcoal, and prices are firm. **Messrs. E. P. and W. Baldwin** are well off for orders for this class of plate. **GALVANIZED IRON:** The demand still keeps quiet, and we do not look for extensive orders from the Australian Colonies until stocks are further reduced. The present time offers a favourable opportunity for buyers to place contracts, as prices were never so low, and an upward movement in the Spelter market may at any time cause a rise. **LEAD:** Prices are slightly lower, but the market closes firm. **HARDWARE:** We have made further reductions: on anchors, 3d. to 6d.; chains and cables, 3d. to 1s.; and on Tinsman's wire 3d. per cwt.

**THE MINING SHARE MARKET** has been rather quiet this week, with very little change in prices, and most of our quotations are merely nominal. The mines mostly dealt in have been Wheal Crebor, Wheal Peavor, Roman Gravel, Parys Copper, Glenroy, Wheal Grenville, South Condurrow, Penstruthal, and a few others.

**TIN MINES** continue flat. The standard for ore was lowered last week, although we understand there is less tin in stock, and that the shipments from Australia last month were only two thirds of what they were in June last year. In 1875 the average price of Cornish tin was 82l.; in 1876, 72l. 5s.; 1877, 65l. 7s.; 1878, 56l. 10s.; and there are now said to be 3656 fewer miners employed in Cornwall than there were last year. Wheal Peavor, 9 to 9½; at the meeting on Tuesday the accounts showed a profit of 1705l. 16s. 10d. on five months' working, and a balance in hand of 2190l. 7s. 11d. A dividend of 10s. per share (1500l.) was declared, leaving 699l. 7s. 11d. to be carried forward. The tin sold, 165 tons, realised 5943l. 13s. 3d. The costs were charged up to June 7, and consisted of labour, 2995l. 12s. 3d.; merchants' bills, 1565l. 4s. 2d.; lords' dues, 321l. 18s. 1d. The agents are pleased to be in a position to report so favourably on the mine, which is looking remarkably well, and they promise, all being well, to sell a similar quantity of tin for the next four months.

East Lovell, 1½ to 2, call paid; at the meeting here a call of 12s. 6d. per share was made. The accounts showed a debit balance of 1527l. 19s. 11d. for nine months' working to May 17. The next meeting is to be held in five months. The report states that at Sevoragan there is a very promising lode, which has considerably improved within the last 2 fms. It is all the width of the shaft, and producing rich work for tin, and may lead to good results. Carn Brea, 24 to 26. Dolcoath, 24 to 26. Cook's Kitchen, 1½ to 2½; call of 10s. paid. East Pool, 9 to 9½. South Condurrow, 11½ to 12; South Frances, 8 to 8½. Tincroft, 8 to 9; West Basset, 3½ to 4; West Frances, 4½ to 5; Wheal Agar, 2½ to 3½; Wheal Basset, 20s. to 25s.; Wheal Grenville, 3½ to 4½; West Peavor, 2½ to 3½.

**COPPER** remains dull; but at the Cornish Ticketing on Thursday the standard advanced to 87l. 1s. — 3l. 10s. per ton of ore for 7½ produce. The official ticketing paper erroneously states the fine copper at 144 tons 9 cwt., instead of about 92 tons 12½ cwt., and thus indicates a decline. Devon Great Consols, 1½ to 2. Mellanear, 3½ to 3½; the sale here—601 tons—realised 1898l. Wheal Crebor have been down to 2, but leave off 2½ to 3; at the meeting, full particulars of which will be found in another column, a call of 2s. per share was made. The accounts show a loss on four months' working of 472l. 14s. 9d.; a cash balance in hand of 104l. 3s. 10d.; and liabilities over assets of 473l. 15s. 6d. The report of the mine and the late discovery is very favourable. The present returns are about 100 tons per month, and about pay cost. When the winze from the 108 has been communicated with the 120 the agent calculates to double the returns, and make a profit of 3000l. per month. At Gunislake (Clitters) the accounts for four months to April 26 showed a credit balance of 1092l. The copper ore—618 tons—had realised 2068l., and the mine is reported as looking much the same as for some time past. Marke Valley, 10s. to 12s. 6d.; Parys Corporation,

10s. to 12s. 6d.; Morfa Du, 16s. to 18s.; Penstruthal, 2 to 3; South Caradon, 45 to 50; West Seton, 11 to 13; West Tolgus, 19 to 21.

**LEAD MINES** show no change, and prices are quite nominal. Van, 16 to 17; the directors have declared a dividend for the quarter of 5s. per share, or 3750l. Roman Gravel, 8 to 8½; the mine looks the same as for some months past, and will sell 200 tons of lead ore on Saturday. Tankerville, 2½ to 3; the lode in the 220 is widening and improving. Great Laxey, 15½ to 16½; Herodsfoot, 2½ to 3; Aberllyn, 10 to 11.

At Rookhope the stopes above the 42, near the Gin shaft, have improved to 22 cwt. of lead ore per fathom, and the agent writes that the mine is looking better than for some weeks past. East Roman Gravel lode, at the 75 south, is worth 1 to 1½ ton per fm., and entering the run of ore seen in the tribute pitch above. South Darren, 1½ to 1½; the 100 west is worth 2½ tons of ore per fathom. The stope in back of level 2½ tons, and the stopes east of No. 2 winze are worth together 3 tons of silver-lead ore per fathom. Pateley Bridge, ½ to ¾; the sump-winze in Rake vein, under the 30 east, is worth 10 tons of ore per fathom. West Pateley, 2 to



Bryn Glas is reported to be progressing satisfactorily. Cwm Brynno are quoted 2 to 2½. Pant-y-Mwyn, 2½ to 3; the additional 4000 shares now offered to the shareholders only are being fairly applied for, which speaks for itself as to their appreciation of the property. Rhylalun are quoted 1½ to 1½.

Caron, 2 to 2½; good progress continues to be made at the mine. Froncoch, 1½ to 2; all operations going on well, and prospects improving. Grogwylion, 2½ to 3; no fresh news this week. Crosswood, 1 to 1½. Red Rock, 2 to 2½; the mine continues to look very promising. Wye Valley, 1½ to 1½; prospects here are steadily improving, and the bottom levels opening up well. West Wye Valley, 1 to 1½; fair progress making here, and mine looking well. Mawston, 1½ to 2; no fresh news. Hartington, 1½ to 2. St. Harmon, 1 to 2.

Mineral Corporation, 10 to 11; operations at the mines are reported to be going on as usual. A detailed report is expected next week.

Pateley Bridge, ½ to ¾; the 30 end east, on Rake vein, is in a strong lode, producing ore, but not enough to value, looking well. The pump winze, below this level, is worth 10 tons of ore per fathom. New machinery and all other operations looking well.

Subjoined are the closing quotations:—

Ashington, ¾ to 1; Carn Brea, 2 to 2½; Devon Great Consols, ¾ to 1 prem.; East Caradon, ¾ to 1; East Van, 1 to 1½; Gwynnynydd, 4 to 4½; Great Laxey, 1½ to 1½; Hingston Down, ¾ to ¾; Leadhills, 1½ to 2; Marke Valley, ¾ to ¾; Pateley Bridge, ½ to ¾; Roman Gravel, ¾ to 1; Tankerville, ¾ to ¾; Tincroft, ¾ to ¾; Van, 1½ to 1½; West Bass, 4 to 5; Wheel Grenville, ¾ to ¾; Almada and Trito, ¾ to ¾; Birdseye, ¾ to ¾; Blue Tent, 2 to 2½; Canada Gold, 2 to 2½; Chontales, ¾ to ¾; Colorado United, 1½ to 1½; Don Pedro, 1½ to 1½; Eberhardt and Aurora, 3 to 3½; Flagstaff, ¾ to ¾; Frontino and Bolivia, 2 to 2½; Hultafall, 2 to 2½; Kapanga, ¾ to ¾; New Quebrada, 2½ to 2½; Placerville, 2½ to 2½; Port Phillip, ¾ to ¾; Richmond Consolidated, 9 to 9½; St. John del Rey, 255 to 255; Sierra Buttes, 3 to 3½; United Mexican, 3½ to 3½.

At Redruth Ticketing, on Thursday, 1300 tons of copper ore were sold, realising 4540l. 19s. The particulars of the sale were—Average standard, 87½ ls.; average produce, 7½; average price per ton, 3l. 10s.; quantity of fine copper, 92 tons 12½ cwt. The following are the particulars:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
June 5 1879	88	16	0	7½	23 11	6
19 1879	88	15	0	6½	3 4	0
July 3 1879	87	1	0	7½	3 10	0

Compared with the last sale, the advance has been in the standard 1l., and in the price per ton of ore about 1s. 4d.

**CHEMICALS, MINERALS, AND METALS.**—Messrs. J. Berger Spence & Co. (June 28).—Alum: Loose lump, 6l. 2s. 6d. to 6l. 5s.; ground, 6l. 15s. Arsenic: Best white powdered, 8l. 15s. Borax: Refined, English, 36l. Copperas: Green, 60s. 0d.; white, 8l. 15s. Copper: Sulphate, 18l. 15s. to 18l. 10s. Nitrate of Lead: 30l. 10s. Saltpetre: Refined English, 33l. 15s. to 35l. Sulphate of Zinc, 6l. 0s. 0d. Sulphur: Roll, 8l. 10s.; flowers, 10l. 10s. Tin crystals, 5½d. per lb. White Lead, 20l. Barytes: Carbonate, 5l. Brimstone: Best thirds, 6l. China Clay, 38s. Oxide of Zinc, 22l. 10s. Talc, 10s. Umber, 70s. Charcoal: Best stick, 4½d. per bushel; field burnt, 6d. Globe Steam-Boiler Powder, 16s. per cwt. Naphtha: Miscible, 60 per cent., 4s. 4d.

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: Treatment of Sulphides (J. S. Merry); Treatment of Copper Sulphides (C. King); Treatment of Cupreous Sulphides (W. Galbraith); Utilisation of Sulphides as Fuel (G. J. Brown); Sheffield Pig-Iron and Copper Sulphides; Richmond Mining Company (E. Breton); The Rio Tinto Company; Bute Mining Company; Flagstaff Silver Mining Company; The New Quebrada Company; Canadian Mining Notes—No. XXV.; Ocher; Windmills for Mining Purposes; Is it Right to Pay Purchase Money for Mines? (A. Léon); The Copper Market and its Prospects (S. L. Bensusan); Stagnation in Mining; Practical Mining (R. Knapp); The Llanrwst District (R. Knapp); Mining in the Llanrwst District; the Science of Investment (R. Tredinnick); Meetings of Public Companies: Wheel Pevor, Penrthral Tin and Copper. Improvements in the Treatment of Peat; Patent Matters, &c.

**THE COMSTOCK MINES.**—Some interesting facts have recently transpired with reference to the early history of these mines—facts of especial interest to English shareholders. It appears that the first 30 tons of ore were taken from the Ophir Company, and when sent to San Francisco was literally an elephant on the hands of the company, as they had no means of ascertaining its value and working it. A few gentlemen from Germany showed themselves willing to smelt the ore. They had some assays, which gave at the rate of \$1000 to the ton, but the company got only \$1500 for ore worth \$5000. That was the beginning, in fact, of all mining on the Comstock lode. The company's stock consisted of 12 shares at \$300 each. The mine paid very largely, and had the same economy been practised which is now in vogue it would have proved even more valuable. This applies also to the early history of the Comstock mines. The gold was literally thrown away. Not more than 40 to 50 per cent. of the ore was realised. The mines were really exhausted and wasted before they learned how to work them. People are glad to get mines now which then were looked upon as worthless.

**ALMADA AND TRITO.**—At the meeting, yesterday, of the shareholders the report of the directors, which was of an encouraging nature, was adopted. A report of the proceedings will appear in next week's Mining Journal.

**GOLD MINING IN VICTORIA.**—It was recently stated publicly that the Magdala Quartz Company's shaft at Stawell, which is now sunk over 2100 ft., was getting very near the depth from the surface of the earth at which it would be found too hot for men to work, and the manager was requested to test the temperature at various depths in the shaft. The following is his report, which shows that there is very little difference between the temperature on the top and below:—"I have taken the temperature of the shaft. When the thermometer was close to the bottom the mercury stood at 82° Fahrenheit; when suspended 10 ft. from the bottom, at 80°; and in the chamber, at 74°; in the western drive, at 82° in the face; in the rise, where no air pipes carry air, at 84°. On the same afternoon the same glass showed the temperature inside the office on the surface of the ground to be 80°."

**BWLCH UNITED.**—The new 60-ft. wheel goes to work on the 10th inst., when an important deputa- tion of the shareholders will visit the mine. From a section it appears that a second deposit of ore has been extensively wrought east of the great bunch which yielded 9000l. a year profits to the Goginan shareholders. Again a bunch of ore of considerable value is wrought by the same company home close to the boundary. These facts prove that the Bwlch United is proven to be productive down to the deep adit level, 120 fms. from surface, hence large tracts of productive lode must necessarily exist in the Bwlch United.

**LEAD ERA.**—Captain J. A. Ede has forwarded to the office of the company a section of the underground workings, which shows the position and intersections of the various measures and flats traversing the concession. The lodes appear to be those of the Minera, and the strata, characteristics, and composition identical with the carboniferous formation overlying the mountain limestone at Minera, Westminster, and the other great producing and lasting mines of Flint and Denbighshire. Two or three months will effect great changes in the productive power of the mine, while the prospects seem to be second to few other enterprises in this interesting and highly prosperous district.

#### TURBINE WHEELS.

The reading of a sound practical memoir frequently leads one to study the subject dealt with, although otherwise it would be neglected by him, and this observation is particularly applicable with regard to the memoir on turbine wheels by Prof. TROWBRIDGE, of Columbia College, New York, which has just been reprinted\* from Van Nostrand's Electric Engineering Magazine, the object of the memoir being to show the inapplicability of the theoretical investigations of the turbine wheel as given by Rankine, Weisbach, Bresse, and others to the modern constructions introduced by Boyden and Francis. The professor, after correcting an important error in former treatises on hydraulic motors, explained how the best practical results have been obtained by modern engineers who have discarded the formulas of the old standard works. He remarks that if Boyden and Francis had followed strictly the rules of construction laid down in the works alluded to they would have failed in their efforts to construct turbines giving any considerable increase of efficiency over the old Fournayron and Fontaine or Jonval wheels of European design and construction. The theorem insisted on by

the writers in question was that "the water must enter the wheel without shock," and hence the mathematical condition of the tangential velocity of the wheel where it receives the water, and the corresponding component of the velocity of the entering water must be equal, the effect of which is to prevent all impulsive effects of the entering water. In the old Fournayron wheel the effects of the water in producing mechanical work were thus made to depend solely upon the subsequent deviation which it experienced in passing through the wheel.

It is to be noted, says Prof. Trowbridge, that both Rankine and Weisbach, in discussing the impulse and reaction of jets of water upon moving vane, makes no reservation in regard to the shock due to impulse, but demonstrate that water may impinge at any angle and with any relative velocity upon vanes, and by a suitable arrangement of curvature and velocities may have all the energy destroyed, and a perfect efficiency may be obtained. It is, he continues, difficult to understand why in the discussion of the turbine-wheel they insist on a different principle, and lay down a mechanical axiom at variance with these demonstrations. An unnecessary importance seems to have been attached to the idea that a stream of water to produce its best effect upon a vane or float must glide upon the latter in a tangential direction. He directs a very simple experiment to demonstrate this, which requires no other apparatus than a goblet and a goose-necked tube. In conclusion, Prof. Trowbridge states that the general principles to be kept in view for all buckets are—That the channels between the buckets shall not have abrupt changes in direction; that they shall be as short as possible; that the curvature of the buckets shall be continuous; that the discharging edges of the buckets shall have a uniform discharging angle; and that the cross section of the channels between the buckets shall be uniform throughout. It is especially important that the water should leave the guide-blades and enter the wheel in clear transparent streams without contraction, in order that these streams may continue unbroken through the wheel to the point of discharge. The value of the information given by Prof. Trowbridge cannot be over-estimated, and the memoir should be carefully studied by every engineering student.

#### WAKEFIELD WATERWORKS.

**WANTED, a PORTABLE ENGINE** (new or second-hand), about 20-horse power, with strong spur gearing, capable of working two 15 inch pumps, lifting water a height of 42 yards. Offers to be sent to Mr. EDWARD FILLITER, Civil Engineer, 16, East Parade, Leeds, on or before Wednesday, the 9th July.

#### REDUCTION OFFICER.

**WANTED, the SERVICES of a THOROUGHLY QUALIFIED REDUCTION OFFICER, to TAKE CHARGE of the REDUCTION DEPARTMENT in an extensive Gold Mining Establishment abroad.** Climate perfectly healthy.

Applications, stating full particulars as to experience, previous occupation, &c., to be addressed to "R. O." care of Messrs. J. Burbridge and Co., Advertising Agents, 62, Moorgate-street, London, but no one need apply who has not had practical as well as theoretical experience in the Treatment of Gold Ores, nor unless he can produce satisfactory testimonials.

**WANTED, a SITUATION as MANAGER of LEAD SMELTING and DESLIVERISING WORKS, either at home or abroad, by a THOROUGHLY EXPERIENCED YOUNG MAN, who has directed the building of works abroad, and who has instructed natives in these processes.** Address, "Smelter," Monkton, West Boldon, via Newcastle-on-Tyne.

#### REDUCTION OFFICER.

**WANTED, to PROCEED to CENTRAL AMERICA, a Person acquainted with the TREATMENT of AURIFEROUS ORES.** Must have had at least two or three years' practical experience in a Gold Mine. Copies of testimonials ONLY to be addressed "C." care of Messrs. G. Street and Co., 30, Cornhill, London, E.C.

**WANTED (immediately) about THIRTY TONS of STEEL or IRON FLAT-BOTTOMED CONTRACTORS' RAILS, about 22 lbs. to the yard.** Apply to SALMON, BARNES, and Co., Engineers, Ulverston.

#### TO MINING ENGINEERS AND COLLIERY OWNERS.

**WANTED to LEASE, a BARNSLEY THICK COAL FIELD, or the PURCHASE of a GOOD COLLIERY working the above coal would be preferred.** Address, "St. Helen's," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

#### TO MINING COMPANIES.

**THE ADVERTISER seeks a RE-ENGAGEMENT.** Accustomed to LEAD MINING, DRESSING, ERECTION OF MACHINERY, &c. Experience in France, Spain, &c. No objection to go abroad. Good references. Address, "G. R. T." Cleveland.

#### BONA FIDE AND SAFE INVESTMENTS.

**ROCHE FELSPAR COMPANY (LIMITED), AND BELL TIN AND COPPER MINE (LIMITED).** THESE SHARES cannot fail to TAKE a PROMINENT POSITION in the MARKET shortly, and a great advance in price. See Mining Journal of the 7th for the report of the recent discovery of feldspar, and this day's Journal for the analysis of the spar. For full particulars and prospectus, apply to T. R. PARKYN, Jun., Finsbury House, Roche.

#### SOUTH DARREN LEAD MINE.

**FOR SALE, FIFTY FULLY PAID UP SHARES, at 33s. each.** In this excellent Mine, now making large and regular monthly returns of rich silver-lead ore. Apply by letter to "W." MINING JOURNAL Office, 26, Fleet-street, London.

**TO BE SOLD, a SMALL COLLIERY, working both HARD and SOFT COAL, in DERBYSHIRE, and in the depressed state of trade can be purchased as a bargain, and with good management could be worked to considerable profit.** Address, Mr. J. G. HARRISON, 139, Norfolk-street, Sheffield.

#### ARENDAL MINING AND SMELTING COMPANY.

**FOR SALE, ONE HUNDRED AND TWENTY-FIVE SHARES in the ARENDAL MINING AND SMELTING COMPANY (LIMITED).** Price £3 per share, with £3 10s. paid. No reasonable offer refused. Apply to Mr. JOHN DAW, Skien, Norway.

#### TO MR. JEREMIAH THOMAS.

**I, JOSEPH PARSONS BIDDLE, of MERTHYR TYDFIL, in the county of Glamorgan, Iron Founder, do hereby admit and acknowledge that I have INFRINGED upon your PATENT for the CONSTRUCTION of a SMALL COAL WEIGHING MACHINE, technically known as "Billy Fair Play," and hereby express my regret, and apologise to you for so doing, and also consent and agree that you are at liberty to publish this APOLOGY in such manner, in such papers, and for such period as you may think proper.** JOSEPH P. BIDDLE.

Price One Shilling.

**MINING SHARES, AND HOW TO DEAL IN THEM.** By E. H. GABBOTT. MINING JOURNAL Office, 26, Fleet-street, E.C.

**CAPTAIN ABSALOM FRANCIS, MINING ENGINEER, GOGINAN, R.S.O., ABERYSTWYTH, CARDIGANSHIRE.**

Goginan, April 3.—The present time offers an opportunity for capitalists such as, in my opinion, that is not likely to occur again for very many a long year. To those who have acted on my advice since the commencement of the present year a rise has occurred in prices of shares equal to fully 60 per cent., and to those inclined to invest there are really probabilities that every £1 now placed will realise ten times the amount before this year closes. ABSALOM FRANCIS.

#### HENRY WIGGIN AND CO.

(LATE EVANS AND ASKIN).

**NICKEL AND COBALT REFINERS BIRMINGHAM.**

**MR. WILLIAM BREDEMAYER, MINING, CONSULTING AND CIVIL ENGINEER, U.S. MINERAL SURVEYOR FOR UTAH AND IDAHO. NOTARY PUBLIC.**

Geological examinations; reports on mining properties; surveys mines, rail roads, and canals, and superintends the workings of the same. Prepares estimates and plans for opening and working mines. Expert on mining questions before the Courts. Address, "P. O. Box 1167," Salt Lake City, Utah.

#### CAPPER PASS AND SON, BRISTOL

**PURCHASERS OF LEAD ASHES, LEAD SLAGS, SULPHATE OF LEAD, HARD LEAD BRASS SLAGS AND ASHES, COPPER REGULUS, MATTE, SCORIA, TIN ASHES, TERNE ASHES, &c., and MIXED ORES or REFUSE, containing LEAD, COPPER, TIN, or ANTIMONY.**

#### GEO. G. BLACKWELL,

5, CHAPEL STREET, LIVERPOOL.

**PURCHASERS OF MANGANESE, ARSENIC FLUOR-SPAR, WOLFRAM, BLENDE, CALAMINE, CARBONATE and SULPHATE OF BARYTES, ANTIMONY ORE, CHROME ORE, MAGNESITE, EMERY STONE, PUMICE STONE, COBRES and UMBERS, CHINA CLAY, LEAD ORE FOR POTTERS TALC, PHOSPHATE OF LIME, &c.**

#### AUSTRALIAN TIN—PRIZE MEDAL, 1877.

**THE UNDERSIGNED is PREPARED to EXECUTE ORDERS for the CELEBRATED**

**"KANGAROO" BRAND.**

S. L. BENSUSAN.

Kangaroo Tin Works, Sydney, December, 1878.

#### R. B. HARPER,

MINING ENGINEER,

Will SUPERINTEND or EXAMINE and REPORT on MINES on the PACIFIC COAST. Having had 14 years' experience in Gold and Silver Mining in Mexico, California, and Nevada. Government Mining Engineer for the Province of British Columbia. Any communications may be addressed Room 49, Nevada Block, San Francisco, California.

#### Mr. E. JACKSON,

Associate of the Royal School of Mines,

**ANALYST AND ASSAYER.**

Assays or Complete Analyses made of Copper, Silver, Lead, Zinc, Tin, and other Ores. ASSAYING TAUGHT.

106, QUEEN VICTORIA STREET, LONDON, E.C.

#### C. H. WALKER AND CO.,

MINING AGENTS AND ENGINEERS, VALPARAISO AND SAN IAGO CHILE.

#### T. V. CLARKE AND CO.,

TRUNDLEY LANE, SURREY CANAL,

DEPTFORD, S.E.

ARE BUYERS OF

CALAMINE and BLENDE; ZINC and LEAD ASHES, SULPHATE OF LEAD, and OTHER METAL RESIDUES.

N.B.—Sole Manufacturers of the Palm Anti-Friction Grease and Lubricating Oils for Collieries, Mines, &c.; also the Asphaltic Varnish Paint for coating outdoor Ironwork and Machinery.

#### ENOCH AND RICHARD PARRY.

MINING AGENTS AND SURVEYORS,

MINSTERLEY, SHROPSHIRE.

Mines inspected and reported on at home and abroad.

#### VAN MINING COMPANY

(LIMITED).

Notice is hereby given, that the Directors have THIS DAY DECLARED a DIVIDEND of £3750, being FIVE SHILLINGS PER SHARE on the 15,000 shares in the company, PAYABLE, free of income tax, on and after the 10th of July next.

The Transfer Books will be closed from the 3rd to the 10th July, both days inclusive. By Order, W. J. LAYINGTON, Secretary.

14A, Austinfriars, E.C., 30th June, 1879.

#### COLORADO UNITED MINING COMPANY

(LIMITED).

TENTH ORDINARY GENERAL MEETING.

Notice is hereby given, that an ORDINARY GENERAL MEETING of the members of the company will be HELD at the Cannon-street Hotel, on WEDNESDAY, 16th July, at Twelve o'clock noon, to receive and consider the report of the directors and the accounts for the year ended 31st of March last; to elect two directors vice Sir Cecil Beadon, K.C.S.I., and J. Cope Davis, who retire from the direction, but offer themselves for re-election; and to elect auditors for the next twelve months. By order of the Board, F. ANDREWS, Secretary.

21, Great Winchester street, E.C., London, 4th July, 1879.

#### NOTICE.

**THE NOUVEAU MONDE GOLD MINING COMPANY** (Société en Commandite à Responsabilité Limitée.)

This company having been REINSERTED in the STOCK EXCHANGE OFFICIAL LIST, it is IMPORTANT that ALL THE SHARES should be sent to the offices of the company, Lombard House, 10, George-yard, Lombard-street, for verification. F. PAGANELLI, Gérant. London, 4th July, 1879.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
June 28—Fosdalc.	100	100	£13 4 0	Weston, Son, and Co.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
June 28—Minera	277	277	£2 15 0	Kenrick and Son.
			2 18 0	ditto
			2 15 0	ditto
			2 19 6	Villiers Spelter Co.
			2 16 0	Kenrick and Son.
			2 16 0	Swansea Vale Co.
			2 11 0	Richardson and Co.

#### COPPER ORES.

Sampled June 18, and sold at Tabb's Hotel, Redruth, July 3.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Mellanear	85	£3 6 6	West Tolgus	78	£3 19 6
ditto	75	2 14 0	ditto	38	7 5 6
ditto	73	3 9 6	ditto	56	6 9 6
ditto	71	2 13 6	ditto	50	5 4 6
ditto	70	3 15 6	West Seton	43	4 12 6
ditto	68	1 18 0	ditto	39	3 15 0
ditto	65	1 17 6	ditto	33	3 15 6
ditto	59	2 12 0	North Trekerby	24	3 6 6
ditto	35	6 12 0	South Crofty	20	2 9 0
East Pool	77	1 18 0	Pope's Ore	12	3 3 6
ditto	67	3 2 0	ditto	5	7 10 6
ditto	65	1 8 6	Wheel Agar	14	3 8 6
ditto	34	1 19 0	West Bassett	14	2 8 0
ditto	22	1 18 6			

#### TOTAL PRODUCE.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Mellanear	601	£1898 9 0	South Crofty	20	£40 0 0
East Pool	255	588 18 6	Pope's Ore	17	75 14 6
West Tolgus	240	1347 18 0	Wheel Agar	14	47 19 0
West Seton	115	469 14 0	West Bassett	14	33 12 0
North Trekerby	24	79 18 0			

Average standard.....£ 87 1 0 | Average produce.....7½  
Average price per ton.....£ 23 19 0  
Quantity of ore.....1300 | Quantity of fine copper 92 tons 12½ cwt.  
Amount of money.....£4540 19 0  
LAST SALE.—Average standard.....£88 15 0 | Average produce.....6½  
Standard of corresponding sale last month, £ 85 16 0—Produce, 7½

#### COMPANIES BY WHOM THE ORES WERE PURCHASED.

Name.	Tons.	Amount.
Vivian and Sons	319	£1101 5 9
Grenfell and Sons	220½	908 15 9
Nevill, Druce, and Co.	165	517 6 3
Williams, Foster, and Co.	432	1619 13 6
Mason and Elkington	163½	393 17 9

Total.....1300.....£4540 19 0

NO SALE on Thursday next, July 10.

Copper ores for sale at the Royal Hotel, Truro, on Thursday week—Mines and parcels.—Devon Great Consols 800—South Caradon 540—Gunnislake (Clitters) 357—Marke Valley 261—Glasgow Caradon 150—Wheel Owsley 117—Levants 112—Bedford United 47—North Levant 15.—Total, 2469 tons.



## Notices to Correspondents.

\* Machineconveniences having arisen in consequence of several of the Numbers being the past year being out of print, we recommend that the Journal should be altered on receipt; it then forms an accumulating useful work of reference.

Received,—"Shareholder" (Blue Hills)—"W. R." (Bristol); Next week—"Shareholder" (Hull)—"H. B."—Doyle's Tin Mining in Larut—"Shareholder" (New Zealand Kapanga)—"W. S." (Newport)—"L. S." (York)—D. C. Davies (Oswestry). The letter on Slate Quarries in Germany shall appear next week—"J. S. S." (Mining in Cork); Next week—"E. V." (Swastry)—"Cornishman in North Wales"—"Shareholder" (Richmond)—"O. D."

# THE MINING JOURNAL.

## Railway and Commercial Gazette.

LONDON, JULY 5, 1879.

## PUMPING MACHINERY FOR MINES.

Of late years more than ordinary attention has been devoted to the best means of draining mines, so that the mode of pumping water from them may be said to have undergone quite a revolution. At many places, however, the old and ponderous appliances are still in operation, but these, no doubt, will give way before modern inventions, having for their object greater power, with less cost in the first instance, and requiring less labour and fuel. At some few mines the water is got out in a most primitive fashion even now, the process being slow, uncertain, and laborious. Even in France, where machinery in mining operations is looked upon with fully as much favour as it is in England, and where the opening out of mineral fields has been far more costly than in this country, there has at several places been no attempt at introducing pumps. For instance, at the Vieux Conde Mines, in the Nord, 500 tons of water are drawn daily in large iron buckets, the depth of the shaft being 165 yards; and at another one the drainage is effected by water tubs fixed on wheels and run into cages. But at others there are direct acting and other engines, with pumps of the newest construction, the latter, at the Montigny Mine, in the same district, being of wrought-iron 3 ft. 7 in. in diameter; the working barrel 40½ in. in diameter, in two lengths of 10 ft. each; and the lift 44 yards long, at seven strokes per minute, with a 10-ft. stroke; one pump lifting 3500 gallons of water per minute. There were three pumps altogether, the engine driving them being a direct-acting one, the cylinder being 60 in. in diameter, with 10-ft. stroke. As to English pumps, it would be invidious to particularise or go into the merits of them, for all have done good work; but, of course, some have peculiarities that others have not. The Cameron "Special" has been extensively adopted, and is being successfully worked at a large number of mines in various parts of the kingdom. There is also the Ommaney and Tatham, and many others that find more or less favour with mining engineers. In one instance we find the steam used in driving the pumps to pass into the suction-pipes instead of going into the air. HOLMAN's pump is on a somewhat similar principle, but he divides the applied steam more minutely. We have seen the special direct-acting pumping-engine, which Mr. HOLMAN appears to have brought to perfection, at work at many places, and it certainly does its work most effectually. But to digress only for a little, we have it on good authority that the steam-engine was originally a steam-pump.

The first engines of WATT were steam pumps, and he knew the advantages of using steam of a high pressure expansively. NEWCOMEN, who long preceded WATT, was about the first to drain a mine by engine-power. This was at Griff, in Warwickshire, where 500 horses were employed for the purpose. Whilst successfully engaged in draining a mine near Wolverhampton along with a Mr. POTTER, by accident he found out that he could make the engine go faster by applying the cold water inside the cylinder. Whilst the engine was working it was found all at once to go much faster, and upon searching for the cause they found a hole in the cylinder, which admitted the cold water from the outside casing, and this, procuring a quicker vacuum, caused more strokes per minute. At the same time it was also found out by accident that the engine could be made self-acting by having a rod connected with the beam to open and shut the valves. About the same time BRINDLEY added the "water feed" for the boiler, which he made self-acting by means of a float in the boiler communicating with a valve in the feed pipe, so regulating the supply of water. SMEATON, who followed, made several improvements, more especially with regard to that part which bears his name and regulates the strokes of the engines. But these instances of improvement, and the many that have since followed them, show that the construction of the steam-engine was not the work of one man or of one mind, but was "thought out" in detail by many persons. So far back, indeed, as 1663, the expansive power of steam was known to the Marquis of WORCESTER, as is evidenced by his work—"A History of the Names and Scantlings of Inventions"—for he says that "his waterwork is by many years' experience and labor so advantageously contrived that a child's force bringeth up 100 ft. high an incredible quantity of water, even 2 ft. diameter, so naturally that the work will not be heard into the next room, and with so great ease and geometrical symmetry, though it work day and night, from one end of the year to the other, it will not require 40s. reparation to the whole engine nor hinder one day's work, and not only with little charge to drain all sorts of mines and furnish boilers with water, though never so high seated." It will be seen that the effectual draining of mines was one of the principal objects of the earliest inventors, and with the great improvements of WATT and STEPHENSON it is evident that the same desire actuates our engineers at the present time, and this brings us back again to the pumping appliances now adopted at our mines. Foremost amongst these is the Tangye and Holman direct-acting compound pumping engine, which has met with great success, if the number in use may be taken as the guide, and it is certainly the best one to go by. The engine consists of a steam cylinder and a water cylinder fitted with a suitable piston, the steam piston being connected with the water piston by means of a common piston rod, to which they are secured, one at either end, with no other fitting or connection. The valve mechanism of the steam cylinder consists of four pieces of iron, without a screw, pin, or joint to either, two small plug reversing valves (one placed in each cylinder head), a slide valve, and a cast or malleable iron plunger or carrier to move the slide (a flat-ground face valve) backward and forward so as to permit ingress and egress of steam to and from either side of the steam piston alternately in the ordinary way. The pumps are double-acting, and fitted with HOLMAN's patent valves and seats, and, having no central seatings, wings, arms, or grids to obstruct the passage of the water, contribute considerably to the durability and good working of that part of the machine. The power of the Tangye and Holman pump has been illustrated at one of Messrs. FRASER's collieries at Bishop Auckland. An engine was constructed for having a 26-in. diameter steam cylinder with a 6-ft. stroke, the stipulation being that it should be able to raise 120 gallons per minute 1040 ft. high in a single lift, and this it accomplished with as much ease as if the load was only delivered 100 ft. high. Economy of space and cost, durability and simplicity, and the power of drawing water from great depths are amongst the leading characteristics of the Tangye-Holman pumping-engine.

Mr. HODGSON's pumping-engine is not so well known, but in it the whole of the steam is thrown into the suction pipe, and it is contended that such has the effect of increasing the power of the engine. Messrs. HATHORN, DAVIS, CAMPBELL and DAVEY, of the Sun Ironworks, Leeds, are the makers of what is known as differential pumping-engines, which have been made up to 400 horse power. It is claimed for this engine that the first cost is 50 per cent. less than the Cornish engine; that it gives a higher duty under similar conditions of working; requires less costly pitwork; will give a high

duty and work with a high degree of expansion under conditions of working which will not admit of any appreciable amount of expansion in the Cornish engine; saves the pumpwork from the heavy shocks and breakages arising from the pumps taking air; and is a simpler machine, has fewer parts, every detail is on one floor, and more readily accessible. Mr. DAVEY of the firm named, has designed a hydraulic pumping-engine, which appears to have some special advantages in certain circumstances. In deep workings in mines these engines could be advantageously used to raise water to the main pumping-engines, the motive power being supplied from the rising main of the main engine. In hilly districts water drawn from a high level could be conducted by pipes into the mines, and then used to raise a greater quantity of water to the surface, and so obviating the necessity for steam power, as pistons and slide valve wear rapidly away with dirty water; but this is not the case with plungers. In the hydraulic pumping-engine there are no pistons, the power being applied and the work entirely done with plungers. The power plungers are stationary, and are made to serve as pipes to convey the valve-boxes (to which they are fixed) to the inside of the pump-plungers, the latter forming the power cylinders, being connected to each other by side rods passing outside the valve-box, and by this means the forcing stroke of one pump-plunger causes the suction stroke of the other, and vice versa. The valves instead of being actuated by metallic connections are worked under water pressure by means of a small subsidiary valve acted on by tappets from the engines at the end of the stroke, so that a full and free water way is given, realising the greatest possible useful effect. Mr. DAVEY for draining pits during sinking operations considers that hydraulic pressure can be advantageously used. Instead of using wooden spears inside the pump to transmit the power of the engine what is termed a water spear is employed in a pipe on the outside of the pump, the working part of which is attached to a capstan engine by means of a wire rope in such a manner that the rope remains attached whilst the pump is at work, so that should the bucket or clack require removal for re-gearing it is only necessary to throw the capstan into gear, and hoist the working parts to the surface. A forcing engine is employed to pump water into the pressure pipe, to which an accumulator is attached for the purpose of maintaining a constant force. There is a valve-box at the top of the pit from which the pressure from the accumulator is alternately applied through and released from the pressure pipe, causing the plunger and bucket to ascend and descend in the working barrel. The *modus operandi* of these hydraulic engines appear to be simple and effectual, and are certainly worthy of the consideration of those engaged in sinking operations, and in the draining of the dip workings of mines, &c. The Cornish pumping-engine is too well known to require more than a word or two from us. It requires a large building, and for deep mines requires various appliances, such as connecting rods, guides, plungers, &c. It has done wonders in opening out mines and making known the mineral wealth lying at great depths underground, but it was when there was no opposition to speak of. Things have greatly changed during the last decade or two, and old systems are being gradually uprooted by the march of science and the progress of engineering skill. The greatest economy, too, is now more than ever necessary in the carrying out of mining operations, and all inventions calculated to lessen the cost of working must be taken advantage of by mineowners; hence it is that we have thought the time opportune for directing attention to pumping machinery.

## THE COPPER TRADE.

During the quarter ending June 30 the quantity of copper ore, the produce of Cornwall and Devonshire, sold at the Cornish Ticketings, was 10,675 tons, which contained 726 tons 16 cwt. of fine copper, and realised 34,200l. 16s., being equal to an average of 3l. 4s. 2d. per ton of ore, and 47l. 2s. 9d. per ton of copper in the ore. During the same period the British, colonial, and foreign ores sold at Swansea amounted to 4113 tons, containing 521 tons 6 cwt. of fine copper, and realised 28,261l. 6s. 6d., being equal to an average of 6l. 17s. 6d. per ton of ore, and 54l. 4s. 2d. per ton of copper in the ore. The average produce of the ore sold at the Cornish Ticketings was 63 per cent., whilst that sold at Swansea gave an average produce of 12.11 per cent. From this it will be seen that the aggregate sales by ticket were 14,788 tons of ore, containing 1248 tons 2 cwt. of fine copper, and realising 62,522l. 2s. 6d. The subjoined is a summary of the periodical sales at the Cornwall and Swansea Ticketings respectively. The ores sold at the Cornwall Ticketings were—

Date.	Standard.	Prod.	Price.	Per unit.	Tons.	Fine cop.	Amount.
Apr. 3...	84	80	00	7 1/2	1,140	586	10,405 0 6
17...	90	70	00	6 1/2	2,170	1,575	7,247 8 6
May 1...	84	100	00	7 1/2	3	1,444	104 2 4
22...	88	80	00	6 1/2	3	1,117	141 0 0
June 5...	85	160	00	7 1/2	3 11	1,292	94 7 0
19...	88	150	00	6 1/2	3 4	1,187	144 9 0
Total for the quarter					10,675	726 16	34,200 16 0
Quarter ending March, 1879					10,593	731 16	33,029 12 0
Quarter ending December, 1878					12,652	866 17	41,459 8 6
Quarter ending September, 1878					11,463	804 8	39,397 11 6
Total for the year					44,788	3,129 17	148,147 8 0
Showing a quarterly average of					11,197	782 9	37,036 17 0
Corresponding quarter June, 1878					11,740	859 9	41,992 12 0

## The ores sold at the Swansea Ticketings were—

Date.	Standard.	Prod.	Price.	Per unit.	Tons.	Fine cop.	Amount.
April 22...	77	13	2.18	27	2	108.10	1,327
June 3...	77	2	10.15	1.15	8	5	2.10
24...	77	12	10.10	10 1/2	5	17	8
Total for the quarter					4,113	521 6	28,261 6 6
Quarter ending March, 1879					5,158	559 15	28,634 8 6
Quarter ending December, 1878					4,803	612 12	26,721 10 0
Quarter ending September, 1878					8,600	702 18	35,163 5 6
Total for the year					22,679	2,296 11	118,738 10 6
Showing a quarterly average of					5,670	574 3	29,685 17 6
Corresponding quarter June, 1878					9,185	777 6	41,755 14 6

## OUR RAILWAY IRON IN SOUTH AMERICA.

We think it of considerable interest and importance to note the success with which we still hold our own as regards our shipments of railway iron to South America. The Americans have often cast sheep's eyes at the markets of Brazil, Peru, and Chili; but they cannot be said to have done us much harm in those quarters at present. Brazil has been, indeed, a better customer for our railway material this year; and if the consumption of Peru and Chili has rather declined, this result is attributable more to the financial difficulties of the Peruvian and the Chilean Governments than to any other cause. The shipments of our railway iron to Brazil, Peru, and Chili have moved on as follows during the first five months of the last three years:—

	1877.	1878.	1879.
Brazil.....Tons	9,447	8,005	16,521
Peru.....	31	2,040	1,531
Chili.....	578	345	605
Total.....	10,056	10,390	18,657

Thus the demand for our rails and accessories on South American account has been gradually increasing during the last two years, the increase in 1879 over 1878 having gone on by "leaps and bounds," to use an expression which once became rather famous when uttered by Mr. GLADSTONE. The present low rate prevailing for rails has probably tempted the Brazilian Government to infuse a little vigour into the work of Brazilian railway construction, and it has been enabled to do this because the Brazilian Treasury still retains a certain amount of strength.

It appears to us that the lesson which American ironmasters may learn from their comparative failure to establish themselves upon South American markets is one of considerable importance. Just now there seems to be a wave of Protectionist opinion flowing all over the world. The influence and example of two important nations

such as the United States and France is thrown into the Protectionist scale; and this has, of course, a considerable effect. But American ironmasters must see that Protection weakens them. A Protection-nurtured industry is like a delicate hot-house plant, which cannot sustain the rude blasts of wind which harder botanical specimens endure without difficulty. Thus, although American metallurgical industry may be protected so that English rails are virtually driven out from American markets, this very policy renders American metallurgy weak and fragile, and unable to cope with British ironmasters upon markets over which the United States Congress can exert no influence. Great Britain adopted Free Trade ideas in 1846, and can anyone say that for a good 20 years she was the worse for the change? On the contrary, did not the country grow in wealth and resources almost year by year? It is true that matters have not moved on so well with us during the last 10 or 12 years; but this has been rather due to the accumulation of wealth and the growth of luxury, which has turned the heads of employers, and excited the envy and dissatisfaction of the employed. It is certainly a wonderful proof of the value of Free Trade that Great Britain should be able to defy American competition upon the markets of Brazil, which must be nearer to the Americans than they are to us. Free Trade is clearly natural, and, therefore, clearly invigorating.

ANOTHER EXPLOSION AT BLANTYRE.—In October, 1877, over 200 men and boys were killed at Higher Blantyre No. 1 pit, near Glasgow, belonging to William Dixon and Co. (Limited), and on Wednesday evening 27 more were sacrificed by an explosion at No. 3 pit. There were 140 underground at the time, but only 31 of these were in the district affected, 4 of the 31 were recovered alive. It is said that since the explosion of 1877 the proprietors have paid great attention to the ventilation of the pits and to the inspection of safety-lamps, but they did not abandon the use of gunpowder, and this further disaster is ascribed to the practice of blasting. Mr. Macdonald gave notice in the House of Commons, on Thursday, that he should ask the Home Secretary if he had been informed that the Inspector of that district was a coalowner carrying on a mine in the neighbourhood.

NEW SHIPS AND NEW WINDLASSES.—The Retriever, a fine new steamer, built by Messrs. Blackwood and Gordon for the Telegraphic Construction Company, left Port Glasgow Harbour on Tuesday, on a trial trip. This is fitted with all the latest improvements, including Alderman's new patent windlass. A correspondent who happened to visit Port Glasgow informs us that out of five new steamships boarded by him four were fitted with this new windlass recently patented by Mr. A. J. Alderman, of London. The Retriever, it is stated, left Port Glasgow for London.

ECONOMY IN SCOTCH IRON SMELTING.—Some years since Mr. W. Ferrie, managing director of the Monkland Company, successfully introduced the close-topped furnace into the works at Calderbank and Chapelhall, with its self-coking, gas generating process, a system up to that time considered impossible with the ordinary Scotch coal. But the results obtained from the Ferrie furnace were so satisfactory, not only with regard to effecting a saving of coal and ore, but to the superior quality of the iron produced, and notwithstanding the doubts then entertained by many Scotch ironmasters as to the practicability of Mr. Ferrie's innovation, there are now more than half of the Scotch furnaces wrought upon the close-topped principle. Through the introduction of the close-topped furnace, and the firing of the boiler furnaces with gas instead of coal, dross has not only become a drug in the market but a positive loss to the ironmasters, and efforts were consequently made to utilise it. Experiments began to be made with the French system of pulverising the dross, and washing it carefully, so that it might be made into coke before it was put into a close-topped furnace. This was done by means of coke ovens of various kinds, the most simple method consisting practically of coking the coal in a close retort. By this means the products of distillation were conveyed from the oven, all the coal tar condensed, and all the ammoniacal salts caught in an apparatus designed for the purpose. This was certainly so far satisfactory; but Mr. Ferrie has nearly completed a furnace with coke ovens on the top, which, it is expected, will effect all this saving without the extra expense of workmen attending the ovens. The invention is simply a series of coke ovens placed vertically upon the top of the blast-furnace, whereby the coal employed in smelting operation may be coked so as to utilise the furnace gases, or a portion of them, whilst the coke is supplied at a red heat to the main chamber of the furnace below containing the ores and flux. The top of the furnace is arched over, and four vertical retorts are erected in a circle round the top in chambers or spaces formed in brickwork, and heated by the furnace gases ascending from the main furnace, which are led through them. The retorts are charged at their upper ends with coal or dross, as the case may be (and with the present invention it is anticipated that dross may become available), and the coke therefrom is discharged through doors at their lower ends, and passes through doors in the furnace roof into the furnace, the ore and limestone being filled in the usual way through the bell and cone appliance. It is pointed out that the economising of valuable fuel in the shape of dross, which can now be transformed into the very finest coke—the consumption of dross for heating purposes being rendered nugatory by the utilisation of gases—is of itself an immense saving and a largely increased profit to the Scotch ironmaster. The saving effected averages 17 cwt. of dross to every ton of pig-iron manufactured; and when it is computed that one million tons of pig-iron are annually produced in Scotland, the dross thus saved amounts to something like 750,000 tons per annum. And moreover, while the coal is being converted into coke the abstraction of the hydro-carbon is being effected, so that a richer class of iron is capable of being manufactured at a considerably less original cost.

THE ELECTRIC LIGHT.—The publication of the final specification for the third patent taken out in England by Mr. Edison on the subject of the electric light has been followed almost simultaneously by the announcement of further discoveries by the restless magician of Menlo Park. For the present we have only the assurance of Mr. Edison as to the practical value of his latest discovery, accompanied with the admission that "a great mass of detail has yet to be worked out." Unfortunately, the whole difficulty as to the practical utility of the electric light resolves itself into the working out of the details. The economical production of the light has been established beyond question. There is really no controversy amongst scientific men that any given candle power by electricity can be obtained by a less expenditure of force than is necessary to produce the same illuminating power by gas. The problem to be solved is the economical application or adaptation of the power thus obtained. Mr. Edison has demonstrated, we are told, that from 80 to 90 per cent. of energy is converted into light, and that six electric lights are supplied from one horse-power at one-third the cost of gas, and he maintains that the problem of applying the electric light to domestic use has been practically solved. There is, however, the qualification that "a great mass of detail has to be worked out," and the qualification, like the "if" with which we are so familiar as the great stumbling-block in the realisation of the promises of inventors, comes to cool our confidence in the vision which Mr. Edison's demonstration conjures up. It appeared almost certain, however, that we shall have to look to the Americans for the ultimate solution of the problem. Mr. Edison is only one of many inventors who are engaged on the other side of the Atlantic in working out the mass of detail which must be unravelled before electricity becomes a practical source of light, and they are labouring with a persistent zeal, from which we may anticipate the most successful results. The New York Times concludes an elaborate review of the position of the electric light as follows:—"The result of a full survey of the field shows four lamps claiming to meet the conditions of subdivision—Edison's, Holcombe's, Werdermann's, and Fuller's; with one comprehensive method of subdivision, D'Ivernois's, and one double-circuit generator that of Mr. Keith, no one of these has yet been submitted to test on a comprehensive scale, but all have done satisfactory



work in the laboratory, and one of them, Werdermann's, has been tested in outdoor experiments equivalent to street lighting. It is manifest from a full survey of these facts that the gas companies have been driven from every stronghold except that of purely domestic lighting, and that they may be driven from that before the year 1879 closes.

#### REPORT FROM CORNWALL.

July 3.—Though the fall in the tin standards announced last week can hardly be said to have been anticipated, coming when it did, it has had very little influence upon the manner in which the future of the tin trade is regarded in the county, where the mere fluctuations of the London market, especially at the present moment, are not considered as of any very grave importance. By this time, at any rate, it is commonly recognised here that we have now mainly to look to a general revival in trade, the special depressing causes of our own industry being on the high road to removal. Meantime our own direct conditions cannot be regarded as otherwise than full of hope, when at meeting after meeting such favourable reports of the condition of the mines are presented; when a young concern like Pevor can in spite of everything declare such handsome dividends, with a West Pevor on the high road to follow suit; and when we see such enormous strides made in mining practice as is evidenced by the construction of such works in the new skiproad at Dolcoath, these are all facts which cannot be gainsaid, and which are full of the weightiest promise for the future.

Dolcoath is now, of course, the deepest mine in the county, and it is stated that the new skiproad will carry nearly 2 tons of stuff—in point of fact, about 35 cwt.—and will bring up nearly three loads an hour—22 in the eight hours, or nearly 40 tons in that period. The double skip at East Pool, which loads 1 ton and runs eight times an hour, will bring up 64 tons in the eight hours, but then there is a very great difference between the depths of the two mines. There seems to be no doubt that skiproads have solved what was regarded as one of the most difficult problems in the conduct of mining enterprise here, drawing the stuff cheaply and efficiently as the mines get deeper and deeper.

Capt. Southey, too, it seems, has effected an improvement in tin dressing by the modification of the jigger, which is credited with a saving of 20 to 30 per cent. If the results equal anticipations this would convert almost every tin mine now working in the county into a dividend one, even at present prices, and there would be very few indeed that would not pay cost. There is no question at all that the dressing of tin is susceptible of great improvement, even in the wet way, though our idea rather is that by-and-bye dry processes will be introduced far more speedily, economically, and productively. This would effect a large saving, too, in the matter of water rates, which formed one of the topics of discussion at Cook's Kitchen, and which we are glad to learn Mr. Basset, with his usual consideration and liberality, has expressed his willingness to reduce. Water rates do not stand in the same position precisely as dues, but they form in many cases a very heavy item of expenditure.

As an interesting fact, and a tribute, though late, to the memory and genius of one of England's greatest engineers, we are glad to be enabled to state, on the highest authority, that Trevithick's famous engine, shown in the comparative museum at the Kilburn Exhibition of the Royal Agricultural Society this week, is about to be permanently deposited at South Kensington. Among the other things that Trevithick did he was the very first to apply steam to agricultural purposes, and this, the first agricultural steam engine, was made by him in 1811 for Sir Christopher Hawkins, of Trewithan. At Trewithan it has been ever since in regular work up to the present day; now it has been sent to Kilburn by Mr. Tretheway as the parent agricultural steam-engine, and after its nearly three-score years and ten it is to retire from its labours, and take its place as one of the monuments of English (now Cornish) industry and invention.

#### TRADE OF THE TYNE AND WEAR.

July 3.—The Coal Trade has to some extent been interfered with by the usual holidays, but the shipment of coal has been considerable, although scarcely up to the usual average, at Tyne Docks and other important shipping places. There is a good supply of steam and sailing vessels, and the shipments of gas coal and coke continue large. In Northumberland orders at the best steam coal works still remain plentiful, but at others they are somewhat limited, and some pits have been idle in consequence. It is gratifying to note, however, that the present state of this industry is considerably better than it was at the corresponding period of last year. In Durham generally fair average time has been made at most of the works during the past week, and if this continues, and the house coal trade further improves, there will not be much to complain of, considering the general state of business. The men at many of the works complain of the low wages earned. It is worthy of note that at some of the works the masters wish the pits to be worked twelve days per fortnight, but the men refuse to work more than eleven days.

The Iron Trade has shown no improvement during the past week, as there has been a very limited demand for pig-iron, and prices remain at a low ebb. The highest price asked for No. 1 is 37s., and this it is difficult to realise, but a considerable amount of iron is going into consumption, and deliveries for shipment have also been very considerable. The reports as to the success of the new process for steel making continue satisfactory. The directors of Bolckow, Vaughan, and Co. report that they have no doubt whatever of the entire success of the process, and refer to the fact that some excellent steel rails have already been made by it. This official announcement, coupled with the fact that so large a work as the new Forth bridge is to be constructed wholly of steel, has tended to give a tone of cheerfulness to the iron and coke trades. The iron shipbuilding business still continues very brisk, and it is evident that the carrying trade of the world is destined to be done by steamers. Sailing vessels are becoming of little value, and many large ships of this class are now laid up as useless. The general position of the engine and iron works is far from satisfactory; there are, however, some exceptions, as the Jarrow Works, the Elswick Engine and Iron Works, and a few others. At Elswick a large stock of pig-iron is held, and an enormous stock of iron ore is also held. This has chiefly been imported from Spain, and cargoes of the ore are still delivered here weekly.

The large vessel W. D. Lawrence loaded in the Tyne on Monday 3754 tons of Bedlington coal, drawing 26 ft. 6 in. of water. She is bound to Bombay for the P. and O. Company. This vessel was loaded in three days, and on the previous voyage it was loaded at Cardiff, the loading occupying eight days.

The Chemical Trade has been strong during the past week, shipments having been pretty large. Prices are stiff, and as little stock is held an increased demand which has occurred for some time, and is likely to continue, must shortly place this trade in a better position. The confidence in the trade has certainly fallen to a low ebb, as is shown by the present position of the Tyne Chemical Company, the largest chemical works in the world. The value of those works in the market at present does not exceed one-eighth of what it did a few years ago. Should the present demand for those goods continue, which is almost certain, the value, however, must largely increase shortly. There is a good demand at present both for prompt and forward shipment, and, as is noticed above, stocks are very low.

The attendance on Change at Middlesbrough, on Tuesday, was very good, but business was very restricted, as buyers will not purchase in a falling market. Prices were not so strong, and though some of the makers were asking more they generally accept about 33s. No. 3, and 32s. to 32s. 3d. No. 4 forge net. Prices, however, are largely nominal. Messrs. Cunliffe's stocks were 80,300 tons, an increase of 600 tons on last week. The dull state of trade was exhibited by the fact that Hunwick Colliery was offered for sale, but elicited no bid. The shipments of iron have been rather better to the Continent during the past week, between 15,000 and 18,000 tons having been sent to foreign and coastwise ports. The quantity sent to Scotland has been smaller, being only 4310 tons. The continuous decline of Scotch prices tells against Cleveland iron imports. The Scotch market, like that of Cleveland, is also oppressed by

heavy stocks. A considerable decline in Cleveland stocks is expected from last month when the returns are made up, which will be in the course of two or three days. Considerable satisfaction has been caused by a renewal of the assurance of the success of the Thomas Gilchrist steel-making process at Bolckow and Vaughan's Works at Eston, more especially as we learn that steel rails equal to any from hematite ore have been produced from Cleveland pig. There is still a vague kind of uneasiness prevalent least all the financial difficulties of the district have not been overcome, which imparts more or less of uncertainty into the transactions of trade. There is no appearance of improvement in any direction. The finished iron trade is about as low as it can be. The stoppage of works lately has somewhat improved the chances of those which continue at work. There is a little enquiry for plates and bars, but at low prices. Bars are 4s. 15s., and plates 4s. 17s. 6d. to 5s., less 2½ per cent. The steel trade continues pretty active, but there is not much fresh demand. The failure of two iron merchants is announced. In one case the liabilities are set down at 60,000l., and in the other they are stated to be small, and to be confined to very few parties.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

July 3.—The demand for furnace and forge coal is very restricted, and, unfortunately, there are no indications that any alteration is likely to take place for the better yet awhile. The pits are keeping on at much within their full rate of production, and prices are unsatisfactory, possessing, as they do, a downward tendency rather than otherwise. Pig-iron makers are not meeting with an increase of business either as regards best or common sorts. Stocks continue heavy, not alone at the furnaces but also in the hands of buyers. In consequence of not being able to get rid of the pigs which have been accumulating at their works Messrs. J. and T. Williams, of Parkfield, near Wolverhampton, have determined upon blowing-out their blast-furnace. On the other hand, it is announced that Messrs. N. and W. Grazebrook, of Netherton, near Dudley, are making preparations to re-light one of their furnaces, which has been standing for a considerable time, but I have authority for denying the statement. The finished ironmakers are unable to find more employment for their operatives, as buyers of plates, sheets, bars, angles, and other descriptions have generally suspended their purchases till after Quarter-day.

Satisfaction is everywhere expressed that the guarantee fund for keeping the pumps at work in the Tipton district has now reached over 21,000l. Some of the most liberal guarantors are not directly concerned with the iron and coal trades, but are engaged in other manufactures. Hence they are worthy of much commendation, and it would be matter for intense regret if, through lack of interest on the part of iron and coalmasters themselves, the requisite 30,000l. or 40,000l. should not be forthcoming, as the importance of the question involved can hardly be overated. An interview has just been arranged between Sir Horace St. Paul and officials of the commission, with a view to his becoming a guarantor, and similar negotiations are also pending with other employers in the district. At a monthly meeting of the Commissioners, on Wednesday, in Wolverhampton, a resolution was passed requiring every occupier of a mine within the drainage area to make a return of the number of acres occupied, and of the tonnage of mineral raised by him during one half-year ending June 30.

The miners in the Tamworth district who came out on strike are still resisting their masters' terms. They express their determination not to resume upon any reduction.

The associated coalowners of the Bedworth district have this week been laying before Mr. James Mottram, Q.C., judge of the Birmingham County Court, their claim for a reduction of 10 per cent. in wages. They contend that the wages of the pickmen or getters (which were 3s. 8d. per day of 7½ hours before the strike) are greater than they were in 1870, compared with the hours worked, and that the daymen are practically receiving 30 per cent. more wages for the work done than they did in that year. Both sides have agreed to take the figures of 1870 as fair standards of comparison. On the other hand, the selling price of coal is 20 per cent. less now than it was in 1870. The workmen's case is that they cannot live if there should be any reduction, for their average earnings are already barely sufficient to support their families.

NORTH STAFFORDSHIRE IRON AND COAL TRADES.—The Quarterly Meeting of the North Staffordshire Iron and Coal Masters' Association was held on Thursday, Mr. Wragge in the chair. The reports as to the condition of trade showed that the quiet which has so long marked it continues to exist, with no prospect of any early improvement. The dullness was stated to extend to every department, and very little business was done at the meeting, transactions generally being deferred to the Birmingham quarterly meeting. The position of the trade was discussed at considerable length, more particularly with reference to the low prices prevailing and the relative rate of wages paid. Opinions were freely expressed that a reduction of wages was essential to meet in some degree the depression in prices. In several quarters, however, a wish was expressed that a general declared reduction might be avoided, and the emergency tide over by arrangements between each firm and their own men for some modifications either of wages or hours of work, or both. The North Staffordshire Railway Bill, as it left the House of Commons, was laid upon the table, and attention was called to the unreasonable powers to charge for traffic proposed to be taken by the company under the 24th clause.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

July 3.—The depression which has so long prevailed in the lead mining districts of Derbyshire has led to the initiation of a movement on the part of some of the sub-lessees to seek for some relief at the hands of the Duke of Devonshire, who is expected to be at Chatsworth in the course of a few days. His Grace holding under her Majesty the Queen, in right of her Duchy of Lancaster, as lessee is entitled to the mineral duties in the manor, or liberties of Ashford, Hartington, Peak Forest, and Tideswell, and with others to the duties in the manors of Crich, Stony Middleton, and Eyam. The production of ore for some considerable time past has been very far below what it was formerly, whilst the wages of the miners is not more than those paid to ordinary labourers. It is proposed to ask the Duke to lower the duties for the benefit of the employers and workmen, and it is not unlikely that what they desire will be conceded. In the coal mining districts things are getting worse, as the trade has fallen off, and several collieries are now entirely standing. This is the case at Unstone, whilst Eckington, in addition to the number of men that have been on strike for some time, a good many more will be added to the ranks of the unemployed, for the Messrs. Black of the Renishaw Colliery gave their men notice that they intended closing the pit until things mended. The notice expires to-day, and it is not easy to see how such a large number of men are to be maintained, seeing that those at work are not earning much, most of them being on short time. In house coal there has been a decline in the business doing with London, as well as with all other places connected with the district by railway. Prices, too, have reached a point that admits of no thought about profit, and the question is how long can this state of things continue? The masters connected with the association have loyally adhered to the award of the umpire, although it was based on grounds such as no other umpire ever took into consideration—how much should a miner receive to maintain himself and family. We have no doubt it will be the last—as it has been the first—time that Mr. Ellison has been called upon to decide between masters and workmen. Colliery owners still complain of the little doing in steam coal, considering that this is the busiest part of the year. But the trade for this description of coal is nearly all inland, and what is wanted is the supplying of steam vessels in some of our large ports, and this does not appear to be looked for or tried for. The local consumption for the furnaces is not equal to what it was a year or two since, for the output of pig is considerably below what it was not so very long since. A good business continues to

be done at the Bessemer Works, and rails appear to be in as good request as ever, although no doubt owing to the competitive prices having come down considerably.

In Sheffield trade is dull, and in some branches there is even less doing than there was a few weeks since. So many failures, too, happening at the same time has also had a most depressing effect, and the turning of the half-year is looked forward to with some anxiety. The plate mills have not been running quite so well of late, but there has been a steady business done in tyres, axles, and similar material. At the Bessemer works, both in the town and neighbourhood, work continues good, all things considered, whilst just now a large quantity of telegraph cable wire is being turned out. Edge tools, sheep shears, and light implements are in fair request for exportation, but the cutlery branches have become considerably quieter. Australia is still a good customer to us, but orders from America of late have come sparingly to hand.

At the collieries in South Yorkshire business has been very quiet, and at several of them men have either left work in consequence of the closing of the works or are under notice to leave. Meetings have been held during the week, at which the men have been addressed by Mr. Lloyd Jones and others. The wages question has been kept rather in the background, and the speakers have paid a great deal more attention to the rates charged by the various railway companies than to anything else. The question is certainly a most important one, and if a reduction can be obtained it will certainly be of great benefit to both masters and men. The colliery owners have frequently urged upon the directors of the Great Northern the necessity for a reduction of the rate to London, but they have not been successful, and it is to be feared that the representations of the working miners will fare no better. However, they are in the right track, whether they succeed or not. What is required is a rate for coal such as will allow of inland colliery owners being placed in a position in which they will be better able to compete with those sending by water. The present time, however, is most opportune for the colliery proprietors taking into consideration the important question of sending coal to London by water instead of by railway. It has already been mooted, and now wants pushing forward energetically. A lower rate is also required to Grimsby, seeing that our exports from there to the North of Europe are far below what they ought to be, considering the position of the port with respect to the Baltic.

#### REPORT FROM THE FOREST OF DEAN.

July 3.—As we intimated last week might be the case, the Chairman of the Great Western Iron Company has consented to withdraw his action for damages against Mr. Kirkwood, that gentleman having made a public apology and engaged to pay expenses thus incurred, and further engages not to annoy or molest the said Chairman, abandoning all remedies except what he may have at law. Several times during the construction of the Severn Bridge the spring tides (in rough weather) have damaged the staging, in some instances carrying much of it away, which circumstances have occasioned much extra work and delay. A mishap of the kind occurred recently to the staging for the last span, which was rectified, and the work resumed expeditiously. It is now complete and the flooring in progress, the riveting being pushed on with energy. People can now cross the bridge from shore to shore, and it is hoped that in a month's time or a little more the bridge will be practically complete. The Great Western Company has now withdrawn all opposition to the Amalgamation Bill now before Parliament. But it is uncertain what the Great Western Railway Company intend doing with its proposed short link lines in the vicinity, as nothing is being done with a view to their construction—at all events, nothing publicly visible. The Whimsey and Mitcheldean road line is only progressing very slowly, a very few men only being employed. It is true trade is remarkably dull, but were trade to revive the short links and lines alluded to, if constructed, would give valuable additional facilities to the district both for produce and passenger traffic. The coal and iron trades are without improvement—rather, in fact, going from bad to worse; there is a decreasing output of coal and iron ore, and therefore employment is becoming slack and slacker, the outcome being to the proprietors' limited returns, and increasing poverty among the working classes of the Forest. Still, men are hopeful of improvement in time, and evermore their thoughts recur to the bridge now nearly completed over the Severn as being likely to bring some good at least.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

July 2.—The Quinta Colliery and Brickworks has gone into voluntary liquidation, Mr. Williams, the secretary of the company, having been appointed liquidator. If this act should lead to the stoppage of the works, which I hope it will not, every colliery on the Shropshire side of the River Ceirlog will be closed. The depressed state of colliery enterprise received a further illustration in Tokenhouse Yard last week, when the Hafod-y-Bwch Colliery, belonging to the Ruabon Coal Company, was offered for sale. The output of the colliery was given at 120,000 tons a year, which the auctioneer said would at a profit of 6d. per ton give an annual income of 3000l., so that he ought to get 50,000l. for it. But he did not. No one responded to the invitation to commence the biddings at 30,000l. or 20,000l.; indeed, no offer was made for it. It would seem likely, generally speaking, that by a natural process of closing of unprofitable or poorly-paying collieries the output of coal will soon become limited enough without the intervention of colliers' Unions.

The great Traction Engine case has advanced another stage. The Chairman of the Shropshire Quarter Sessions acting in accord, as he thinks, with Captain Galton's report has confirmed the fine of 500l. on Mr. Savin imposed by the magistrates, and condemned him in costs. By Captain Galton's report, as I understand it, the engines, wagons, and weights carried complied with the Act of Parliament; but the ruling of the Chairman was that as the road was not constructed sufficiently well to carry them three-fifths of the cost of reconstruction must be charged to the engines as their proportion of the traffic. A case was granted for the Court of Queen's Bench, to which an appeal will be made. I may be allowed to observe that in my opinion this decision reverses the result of recent legislation. By this legislation the cost of making and repairing roads has been removed from the users of such roads as their exclusive burden, and spread over a whole district. By the Salopian decision the burden has been thrown back upon the users of the roads, with this difference—the carrier of three-fifths of the traffic of the district must pay his share alone, legal costs included, while the cost of the other two-fifths is spread over the ratepayers of the whole district, of which the said carrier being a ratepayer, and a large ratepayer too, must also pay his proportion. I am not lawyer enough to see the legality of such a ruling, but the decision hardly squares with one's notion of justice. But the case is not ended.

The Marquis of Londonderry obtained an injunction, with costs, some time ago against the Rhosydd Lead Mining Company, in Cardiganshire, restraining them from polluting the waters of the River Dorey. The restraint was unnecessary, as the company failed, and, of course, could not pay the costs. But Messrs. Gurwood and Green, two of the officials of the company, the latter gentleman being the engineer, appear to be men of means, so the plaintiff applied to Mr. Vice-Chancellor Hall last week to include them in the list of defendants. This was allowed on condition that plaintiff pays the costs.

The question of the pollution of rivers by mines may be carried too far, and where there is an effort to make the effluent water as pure as is practical by ordinary means, landowners, especially those who derive a good income from lead mines, should be careful not to strain the law too much. In mining, as in farming, it is this subjection of industry to sport within a limited and thickly populated country like Britain that is one of the causes that are driving our men and our trade to other countries.

A new industry is growing in connection with limestone quarrying in my district. There are in most of the quarries in the pale-coloured limestone beds portions known as "rotten rock," in which



there is less carbonate of lime and more alumina and silica than in the ordinary limestone, and which unites these portions for making agricultural lime, or being used for fluxing stone purposes. In the quarries of Savin and Co. this "rotten rock" is now being utilised for the manufacture of mortar and hydraulic cement. A small works by way of beginning has been established at Oswestry, which is fully employed in the manufacture. The lime trade generally is almost as bad as it can be. The same remark is true of the iron trade, for with the exception of the Tfrwd Ironworks, there is not a furnace to be seen in blast in the whole district.

Rumours are rife that the Central Van Lead Mine is looking up. An eminent mining authority from Cornwall has been inspecting it, and probably we shall soon have his report.

The claims of Wales to a share of Government recognition and help in her endeavours after a higher education were fairly put in the House of Commons last night; and, spite of the attempts of Lord G. Hamilton to make fun out of the language of the Principality, and the recent disagreement at the University College, Aberystwith, the justice of these claims was last night generally acknowledged. Perhaps if we kicked up a few rows like the Irish we should the more command the respect of belligerent members. We will, however, wait our time peaceably. In the meantime, I hope every effort will be made to preserve the college at Aberystwith from the least grounds for charging it with sectarianism.

#### REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

July 3.—The Taff Vale Railway Bill has now passed the House of Lords. The freighters offered a good deal of opposition, but the Bill has got through substantially as its promoters desired.

The inquest as to the Cwmavon Colliery accident, by which six men were killed, has been concluded. It will be remembered that the rope attached to the cage broke, and six men were dashed to the bottom of the pit and killed. Mr. Wales, her Majesty's Inspector, said the rope ought to have been changed years ago. Gross carelessness had existed on the part of the mechanical engineer and bank-man, as there was no difficulty in clearing the rope and finding out the state of it. In their verdict the jury censured the officials.

The Iron Trade shows no marks of improvement, and clearances have been rather small during the week, the principal one going to Brazil. The demand for railway iron is, as usual, very dull. Not so the steel rail department, if Rhymney be taken as a criterion of the other works, but this, unfortunately, is not so. Rhymney steel-works last week turned out no less than 1600 tons. In other instances masters hesitate to accept orders on account of the low prices which obtain. The demand for bar-iron is not at all brisk, while no change can be noted in pig-iron. The arrivals of iron ore have been fairly large. Prices have not materially changed. The Tin-Plate Trade is moderately active. The enquiry is about up to the average. Prices are rather easier.

There has been a good demand for steam coal during the past week, but shipments have not been quite so large. The house qualities sell fairly well considering the time of year. The foreign demand for coal is fairly good. Not the slightest change can be noted as having taken place in prices. The crisis in the coal trade has come, but so far as can be at present seen the men are disposed to give way. The associated masters met, and decided to enforce the 10 per cent. reduction, and a delegate meeting of men at Merthyr, admitting the "situation," decided by a large majority to concede it. Sections of the men, however, met, and the house coal men especially—meeting at Llanfabon—decided upon not accepting the reduction. The Rhondda Valley men had a large meeting, and now seem very dissatisfied in the matter. The steam coal men asked the masters to allow them to continue working on the day to day system till the basis of the agreement of the reduction had been agreed on. They contended that since 1875 indirect reductions in various items of labour had taken place. The masters replied that the reduction of 10 per cent. must take place on the present earnings, and that contracts must be monthly. The house coal men asked the masters to allow them to return to the old system of working, but received the same reply as that noted above. At the Rhondda Valley meeting held the men protested against the Dinas verdict, and thought there ought to be another enquiry. It was resolved that the Home Secretary should be communicated with on the matter, especially as the colliery authorities were showing apathy in the explorations. Workmen were requested not to work in the pit except at the work of bringing out the bodies. The men also resolved on the broad principle of establishing a miners' Union for the district. The men at Blaenavon and Tredegar have accepted the reduction without any contention. Patent fuel is rather more active.

The Swansea Wagon Company have won the first prize of 50*l.*, offered at the Royal Show, for the best meat van for railway service. The event has caused considerable satisfaction in the works of the company.

The Tredegar Iron and Coal Company (Limited) sixth annual report shows a profit of 54,352*l.*, which includes 19,240*l.* brought forward, and 9793*l.* for renewals of leases of house property. After paying the interest on loans and debentures the available balance was 37,286*l.*, and the directors recommend a dividend of 2½ per cent., leaving 20,261*l.* to be carried to the current account. It is a matter for congratulation that this company, among so many of its neighbours engaged in a similar trade, is able to pay the dividend referred to, and also show such a favourable balance-sheet as accompanies the report.

The whole of the New Place Colliery plant and machinery have been sold by auction, Messrs. Stephenson and Alexander, of Cardiff, being the auctioneers. Nearly all the lots were purchased by local colliery owners.

An impetus has been given to Bessemer steel trade since the appointment of Mr. D. Jarret to the management of the forges and mills of the Rhymney works, the department under his control evincing the utmost activity, and the mills wearing an improved aspect, which we take as a decided indication of a better state of trade. An extraordinary make of rails was produced last week, when the large quantity of 1600 tons of completely finished steel rails were turned out. This is the largest quantity ever made during a week's time at these works.

**ECONOMY IN TIN MINING.**—The facts brought forward at the Wheal Pevor meeting, on Tuesday, should suffice to dispel the illusion of those who entertained the fear that the days of tin mining prosperity in Cornwall were gone for ever. Captain Thomas Pryor has proved that by energy, judgment, and economy he can raise tin in Cornwall at 26*l.* 6*s.* per ton—a price which will enable Cornwall to compete with any tin-producing district in the world; and he has shown, moreover, that he can do this without unduly lowering the wages of the working miners, 2995*l.* out of a total expenditure in the four months of 4928*l.* having been paid as labour cost. The labour cost represented 16*l.* upon every ton raised, and the adventurers' profit on the 16 weeks' working exceeded 1700*l.*, so that a dividend of 10*s.* per share was declared, and 700*l.* carried forward. The dividend is at the rate of almost exactly 20 per cent. per annum upon the capital, and is over 16 per cent. per annum on the present price of shares, results which afford a conclusive proof that, although capitalists may be sufferers where companies are saddled with heavy amounts of imaginary capital in the shape of fully-paid shares appropriated by promoters and their friends, it is practicable, however, even with the present low prices of metal, to make mines return very handsome dividends upon the amounts which are actually necessary to develop them. As to the future, the purser and Chairman (Capt. Thomas Pryor) said that great credit was due to Capt. White for the manner in which he had managed the mine, having increased the dividends from 5*s.* to 10*s.* per share, and he had no doubt Capt. White would tell them that they could do the same in future. Capt. White said that increased dividends, of course, depended upon the price of tin, but the mine never looked better than at this moment, and an important discovery in West Pevor a week ago greatly enhanced the value of Wheal Pevor. The prospects of both Wheal Pevor and West

Pevor appear excellent, and it cannot be doubted that a few such successes would tend to revive Cornish mining generally.

#### THE COAL TRADE.

Mr. J. R. Scott, the Registrar of the London Coal Market, has published the following statistics of imports and exports of coals into and from the port and district of London by sea, railway, and canal during June, 1879:—

Imports.			Exports.		
By Sea.	Ships.	Tons.	By Railway and Canal.	Tons.	e.
Newcastle	134	114,507	London & North-Western	134,121	15
Seaham	23	17,706	Great Northern	69,432	0
Sunderland	77	55,331	Great Western	84,851	0
Middlesbrough	3	728	Midland	142,886	0
Hartlepool	62	23,605	Great Eastern	43,749	3
Scotch	7	2,852	South-Western	5,135	8
Welsh	8	4,225	South-Eastern	1,607	8
Yorkshire	20	4,347	Grand Junction Canal	249	10
Small coal	7	3,036			
Cinders	6	440			
Foreign	1	147			
Total	358	226,934	Total	472,032	4
Imports—June, 1878	320	189,435	Imports during June, 1878	366,040	12

Comparative Statement, 1878 and 1879.			Comparative Statement, 1878 and 1879.		
By Sea.	Ships.	Tons.	By Railway and Canal.	Tons.	e.
Jan. 1 to June 30, 1879	2433	1,628,813	Jan. 1 to June 30, 1879	3,262,652	9
Jan. 1 to June 30, 1878	2451	1,606,825	Jan. 1 to June 30, 1878	2,682,636	14
Increase—1879	—	121,988	Increase—1879	580,015	16
Decrease—1878	19	—			

#### EXPORTS.

Railway-borne coal passing in transit through district		Tons
Sea-borne coal exported to British possessions, or to foreign parts, or to the coast		77,973
Ditto, sent beyond limits by railway		41,413
Ditto, by canal and inland navigation		7,287
Railway-borne coal exported to British possessions, or to foreign parts, or to the coast		35,595
Ditto, by canal and inland navigation		118
Sea-borne coal brought into port and exported in same ships		495
Total quantity of coal conveyed beyond limits of coal duty district during June, 1879		165,880
Ditto, June, 1878		169,423

#### General Statement, 1878 and 1879.

Total distribution of coal from Jan. 1 to June 30, 1879	1,151,600
Ditto, Jan. 1 to June 30, 1878	1,064,716
Increase in the present year	86,884

#### General Statement, 1878 and 1879.

Increase in coals imported by railway and canal	580,015
Increase in coals imported by sea	121,988
Loss increase in coals exported	97,004
Total increase in trade within the London district	604,999

#### THE TIN TRADE.

Notwithstanding a satisfactory demand for consumption, as is shown by this month's deliveries, our Tin Market has presented anything but a cheerful aspect. Its present state must be chiefly disappointing to those holders who have based their operations upon a gradual decrease of supply. The contrary being the case, and with large stocks held everywhere, some disposition to sell out has of late been manifested, and the market closes very dull in consequence at about 1*l.* decline. There was a good demand for Banca at the beginning of the month, and 39½*l.* was paid in several instances. With more offering the price has since declined to 38½*l.* our closing quotation. Contracts for delivery ex July sale changed hands from 40*l.* to 39½*l.* Billiton has been in moderate request from 39½*l.* to 39*l.* During the last few days, with some pressure to sell, the price has fallen away to 38½*l.*, and we close with sellers over the market. According to an official statement, the production of Billiton for 1878 & 9, from May 1, 1878, until the end of April, 1879, amounts to 92,496 peculs, against 61,794 peculs in 1877-78, 59,532 peculs in 1876-77, 62,000 peculs in 1875-76, 63,000 peculs in 1874-75. We are specially requested to state that the enormous increase for 1878-79 must be attributed to exceptional causes—a large stock of unmetallized ore having accumulated during previous years, and from which the year now closed has reaped the benefit. No complaints about drought have been raised during the past season, and there has also been a total absence of other unfavourable circumstances, which usually affect mining operations: 13,000 peculs Billiton offered in public sale, at Batavia, on the 9th inst., fetched the average price of 48*l.* 15*s.* 6*d.*, costing to sell here about 39½*l.* by steamer; 13,000 peculs will be offered for sale on Monday, Aug. 11. The position of Banca tin in Holland on June 30, according to the official returns of the Dutch Trading Company, was:—

1879.		1878.	1877.
Import in June	Slabs 17,068	7,602	19,487
Total six months	84,326	50,724	72,470
Deliveries in June	15,207	10,980	15,008
Total six months	68,553	59,575	68,897
Stock second hand	49,719	37,000	30,932
Unsold stock	40,493	19,613	26,512
Total stock	90,212	56,613	57,444
Afloat	Peculs 6,800	8,400	7,125

Statement of Billiton:—  
Import in June ..... Slabs 13,800 ..... 2,000 ..... 15,300  
Total six months ..... 57,796 ..... 55,245 ..... 54,145  
Deliveries in June ..... 11,108 ..... 4,800 ..... 6,550  
Total six months ..... 47,759 ..... 43,634 ..... 39,372  
Stock ..... 51,121 ..... 45,922 ..... 45,922  
Afloat ..... Peculs 21,000 ..... 18,000 ..... 15,000  
Quotation of Banca, 39½*l.* 39¼*l.* 39¼*l.* 39¼*l.*

June 30. Billiton, 39½*l.* 39¼*l.* 39¼*l.* 39¼*l.*  
These combined returns of Banca and Billiton for 1879, compared with those for 1878, exhibit—An increase of the import for June of 664 tons; an increase of the import for the six months of 1130 tons; an increase of the deliveries for June of 335 tons; an increase of the deliveries for the six months of 374 tons; an increase of the stock second hand of 789 tons; an increase of the unsold stock of 653 tons; an increase of the total stock of 1443 tons; a decline in the quotation of Banca of 18*s.* per ton. The Government Returns for April are—

April.		Four months.	
1879.	1878.	1879.	1878.
Germany	264	522	318
England	6	—	182
Belgium	159	163	137
France	42	35	123
Hamburg	48	50	30
United States	—	—	20
Other countries	1	78	33
Total	530	843	683

Rotterdam, June 30. EBBELING AND HAVELAAR.

#### THE COPPER TRADE.

Stocks in Europe:—		Tons.
Chiloes and regulus, Liverpool & Swansea (equal to fine)		4,041
Chili bars in Liverpool		21,976
Ditto Swansea		3,759
Foreign copper (chiefly Australian) in London		6,284
Ditto landing		439
English copper in London		50
Chili bars and ingots and Barilla in Havre		4,751
Other copper in Havre		650
Afloat and chartered from Chili to Europe (advised by mail):—		1,518
Ores and regulus (equal to fine)		6,929
Bars and ingots		8,447
Afloat from Australia (advised by mail):—		1,242
Fine copper		3,200
Afloat and chartered from Chili to Europe (advised by cable):—		3,200
Fine copper		—
Total		54,839

Leadenhall-street, July 1. HENRY R. MERTON AND CO.

Since our last issue a large business has been done in Chili bars at 55*l.* 15*s.* to 57*l.* per ton, according to brand and position. To-day the market is steady at 56*l.* per ton for good ordinary brands on the spot, and 56*l.* 10*s.* for arrival parcels. The following transactions took place in furnace material—840 tons Chili regulus at 11*s.* 3*d.*, 750 tons at 11*s.* 4*d.* per unit, 541 tons Chili ore at 11*s.* 8*s.* 50 tons New Quebrada ore at 10*s.* 7½*d.* to 11*s.*, 200 tons Mexican ore at 11*s.*, 60 tons Italian ore at 11*s.*, 350 tons Spanish precipitate at 11*s.* 4½*d.*, and 200 tons English precipitate at 11*s.* 4½*d.* to 11*s.* 6*d.* per unit. Arrivals here during the fortnight of West Coast, S.A., produce:—Menal Straits, from Valparaiso, 20 tons regulus, 340 tons bars; Sorata, from Valparaiso, 835 tons bars, 83 tons ingots; E. L. Partridge, from Valparaiso, 15 tons bars; Castlehead, from Valparaiso, 47 tons regulus, 113 tons bars; At Swansea, from Valparaiso, 543 tons regulus, 543 tons bars; from Copacolla, 645 tons ores, 315 tons regulus; Kate Helena, from Carrizal, 523 tons regulus, 160 tons bars; Atlantic, from Lota, 750 tons bars. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at:—Ores. Regulus. Bars. Ingots. Barilla.  
Liverpool ..... 2078 ..... 21,976 ..... — ..... —  
Swansea ..... 908 ..... 6005 ..... 3,759 ..... — ..... —  
Total ..... 96 ..... 8578 ..... 25,735 ..... — ..... —  
Representing about 29,776 tons fine copper, against 29,318 tons June 14; 19,675 tons June 29, 1878; 15,300 tons June 30, 1877; 12,489 tons June 30, 1876. Stock of copper contained in other foreign ore and Spanish precipitate, 2092 tons fine. Stock of Chili copper in Havre, 4515 tons fine, against 8165 tons June 29, 1878; stock of Coro Coro barilla in Havre, 375 tons fine, against 2000 tons June 29, 1878; stock of Chili copper afloat and chartered for to date, 12,700 tons fine, against 9500 tons June 29, 1878; stock of foreign copper in London, chiefly Australian, 6670 tons fine, against 6045 tons June 29, 1878.

Liverpool, June 30. HARRINGTON, HOBAN, AND CO.

The stocks of foreign copper produce remaining unsold at Swansea

on July 1 were—Copper Ore: Chilian, 906 tons; Cape, 2346 tons; Newfoundland, 4267 tons; Spanish, 133 tons; Dutch, 210 tons; Australian, 36 tons—1693 tons regulus, 6465 tons; and copper, 3759 tons. These totals represent about 7750 tons fine copper. The private sales of furnace material reported during the past month fetched from 10*s.* 7½*d.* to 11*s.* 4½*d.* per unit. The Chili charters for the last fortnight of May were not so heavy as had been anticipated, being 1250 tons in bars and ingots, 400 pure in ores and regulus for England, and 50 tons of bars for France. The first fortnight for June is advised as 900 tons bars and 400 tons in ores and regulus, all for England. The Lake copper shipments for the first five weeks of the year are 3.26 tons, as against 1621 tons shipped in 1878 for the same period. France takes the principal portion of this article. A very fair business has been done in bars throughout the past month, at from 55*l.* 15*s.* to 57*l.*, according to mark. RICHARDSON AND CO.

#### MINING SHARES, AND HOW TO DEAL IN THEM.

It is not easy to imagine any subject upon which it is so difficult to give instruction to the uninitiated as upon dealing in mine shares, because really almost everything depends upon the judgment and even more on the good fortune of the dealer or speculator, more especially when from his not being actually in the market he is compelled to follow instead of assisting to lead a market movement; yet it must not be supposed that there is nothing to be learnt with regard to market operations, or nothing that can be done to minimise losses and facilitate gains. Keeping these facts in view, Mr. E. R. GABBOTT (of Thomson and Gabbott, Threadneedle-street and Stock Exchange) has written an exhaustive memoir on the principles of mine share dealings,\* which gives the capitalist all the information likely to be useful to him, points out the obstacles to success which it is necessary to look for, and explains what he should do to avoid loss and disappointment. Mining, as Mr. Gabbott very truly says, is an industry which lies at the basis of our national greatness and prosperity, and of all industries it is unequivocally the first. Yet it is unappreciated by the general public because of the limited and vague knowledge which it obtains concerning it; to the initiated, however, it has a peculiar fascination.

The precious metals are but mediums, yet the best mediums by which the necessities and luxuries of life are exchanged, whilst of the baser metals it may be said that their value is inestimable, seeing that the whole of the mechanical and constructive arts are entirely dependent on them. The amount of skilled and unskilled labour, which is directly and indirectly the outcome of mining pursuits, and the value of the products of this labour is incalculable. The influence of mining is widespread. Manufactures, commerce, and communities are affected as mining flourishes or diminishes; it is only natural, then, that mining should take such an important place among the industries; indeed, its history is inseparable with that of civilisation itself. Mining has at all times been a pioneer of civilisation and commerce. Our own land is a brilliant example of this. America and Australia have impressed the world with their rapid progress during the past 30 years. Mining is an industry which never dies, and, as it is the keystone of industries, it cannot die, but must go on increasing, and, large as the amounts are which are employed in it, ere long they will doubtless be much greater; but before this can come about the public must needs be better acquainted with it. But, there is a great amount of distrust often shown towards this class of investment; but it can only arise from a superficial knowledge as to what mining really is.

As in every other undertaking there have been failures in mining; but the circumstances which have been at the root of them in no way detract from mining as a profitable investment. We have everything now to make a mine successful where it is possible, but distrust has come about from other causes. With mining there must be risk, and behind this fact unprincipled men have shielded themselves, after submitting the most worthless properties to the public. Men of honour, and of the greatest wealth and most profound learning, are numbered among its supporters; but there are those who cannot be accounted other than doubtful advocates in this department of our mercantile life, as indeed such are to be found in all pursuits. Referring to the selection of mines, Mr. Gabbott remarks that, though we are accustomed to speak of mining as a chance, it is not really so, for in the hands of a practical man all exertions are reduced to system directed by science—the only true course to successful issues—and, under such control, mining becomes safe, and of all industries the most profitable. What the public requires is an honest opinion founded on the knowledge he has gathered from every available source. The broker is an agent, and that only. He is paid for his agency by the commission he makes on all business which he transacts; he, therefore, oversteps the bounds of his profession when he unduly puffs a property to the exclusion of better ones. But the introduction of innumerable bubble companies has caused the public to shun those mines which have nothing to recommend them but the puff of interested parties. As to the relative merits of dividend and progressive mines he reminds his readers that the dividends paid by any mine are not always a safe guide to its intrinsic and prospective value. A mine may have paid large and continuous dividends, and then suddenly fail; and, on the contrary, a mine may have paid but a few small dividends, and then begin to pay large and regular ones. Progressive mines are greater favourites with the speculative capitalist. The shares, often standing at very low prices, there is, in the event of improvement, greater scope for a rise, of which the investor usually takes advantage, and feels himself repaid for his outlay, as well he may, when sometimes he can net 100 to 1000 per cent. profit. The special advantage, then, of adventuring in a progressive mine will be readily perceived.

The system of paying promotion money and loading the capital for the benefit of middlemen and their friends is roughly handled by Mr. Gabbott. It would, as he truly says, require the richest of mines, let alone the average, to meet the demands which are sometimes made. When the company gets equivalents for its money in the form of machinery, and the opening up of the mine, then a premium is only reasonable; but when it is asked for that which is little better than a piece of virgin ground, the practice is iniquitous. He is in favour of the shares being widely distributed among small holders, since large holders are too prone to operate upon the market upon any change of prospects (their holding making it worth their while to pay for early information) by which the small holders are sacrificed. The importance of good and honest management is, of course, noticed; many mines, he observes, having everything in their favour, would have done well but for the bad management. The best of mines not having efficient management are almost sure to be ruined. And with regard to deficient capital he remarks that it soon brings a company into debt, and then it is often allowed to work on from one degree of entanglement to another. Perpetual or terminable preference shares at high rates of interest are first resorted to as a means of strengthening a company; then debentures carrying excessive rates of interest. Under these conditions ordinary shares are barred from the possibility of chance of ever getting a dividend, and they then become of little value. When it is found that a company is drifting into such a state a judicious investor would part with his shares, and wait his opportunity of reinvesting at lower figures should it be deemed advisable. The want of success, however, is not always the fault of the directors or managers—the mine may be utterly worthless, and the money spent little better than thrown away. In such cases, after a fair trial has been given, the affair should be voluntarily wound-up, and the balance from the sale of materials on the mine divided.

After noticing the importance of ascertaining that the mine has good prospects, and pointing out the leading trade or working difficulties which have to be encountered and provided for, Mr. Gabbott deals with the question of economy, remarking that it is essential to efficient management that the strictest economy be exercised. The success of a mine, to some extent, depends on a judicious expenditure of the moneys. In the purchase of materials, for instance, stock has been known to have been bought when there was no possibility of its being used for months, and perhaps years; but this would in some sense be excusable were there advantages in the purchase; but the contrary has often been shown to be the case, and the stock, instead of being bought cheaply, has been excessively dear. The materials consumed on a mine represent large sums of

\* "Mining Shares, and How to Deal in Them," By E. R. GABBOTT. London: Mining Journal, 26, Fleet-street.



money, and tradesmen's discounts have often been allowed to the manager; and, as mining companies sometimes take long credit, discounts are really paid at the expense of the shareholder. The only course open to stamp out such evils is to receive contracts from the various local merchants, and to pay cash for all goods. This system has been introduced at some mines, and has been found to answer favourably for the shareholders.

Upon the subject of investment and speculation, Mr. Gabbott observes that there is, to some extent, a prejudicial feeling abroad respecting markets, and it is foolishly pandered to by disappointed or interested parties. The Share Market is undoubtedly one of the most valuable institutions in the land; it is not established for speculative purposes, but to meet the wants of investors. But speculation, in a greater or less degree, always clings to investment, whatever branch of commerce or industry we consider. As mining necessarily involves risk it is always safer to minimise it by investing in several mines of approved character at the same time. No matter how promising a mine is, or how well introduced or managed, it is unwise to limit investment to any particular mine. There is always risk in mining, and it is unavoidable; but the chances of large profits run high. A good interest in one successful mine is a fortune, but such opportunities are not of an every-day occurrence; this, then, is the chance that the investor is running, he may or may not be successful, and, as it is impossible to forestall these things, it is the better plan to make the chance as wide as possible, by having several instead of one opportunity of succeeding. A capitalist may invest in four different mines, and one successful one, should three prove to be a dead loss, would recoup him, and leave a handsome profit as well. Mines on the original capital frequently pay as much as 50 per cent.; when such large profits are made the market value of the shares is consequently increased.

Equally clear and explicit details are given with regard to various other matters upon which the investor or speculator is likely to require information. Mr. Gabbott having evidently taken the utmost care to make his book useful and reliable; indeed, the work may be regarded as worthy of general study, as it will supply that knowledge so much required for preventing the failures so commonly complained of by the outside public who deal in mine shares.

#### METHODS OF WORKING THE DADE COAL MINES.\*

The mines are situated in Dade county, Georgia, 22 miles south-west of Chattanooga, Tennessee. The seam, called the Dade vein, or brown seam, has a general dip of 5° to the north-west, and an average thickness of 3 ft. 10 in.; it contains two thin partings of oily shale. On the whole, the seam is quite regular, but in places it varies rapidly in thickness. The roof of the seam is tolerably good, formed of grey slate about 50 ft. thick. Below the seam is a thin band of hard black slate, from 1 in. to 6 in. thick; under this is a bed of hard, white, close-grained sandstone, about 30 ft. thick. The irregularities in the seams, called "squeers," are due to this sandstone forming bosses and hollows, whilst the roof remains unchanged; over the bosses the coal may dwindle to 6 in., whilst in the hollows it sometimes amounts to 9 ft. These irregularities necessitate various modifications in the ordinary methods of working.

As soon as a squere is struck in an advancing entry, work is suspended until the width of the squere is known. To ascertain direction, drifts are turned off at right angles to the entry, whilst drifts are at the same time turned off from entries parallel with that in which the squere was first struck. If the squere is narrow, work is resumed in the latter, and the coal worked; if wide, the entries on either side are continued until they can be connected by a cross-cut, and a new entry is started in the direction of the suspended one. In this manner the necessity of driving through many squeres is avoided, and yet all the coal of value is taken out without any irregularity in the workings.

The seam was formerly worked entirely by room and pillar. It is now worked by long work, in withdrawing; but this method cannot safely be adopted in advancing, except by employing a very large amount of timber for cribbing.

The roof often sealed off in the room, and this sometimes reduced a miner's output by from 4 to 6 cars of coal per week, as the system there is for the miner to keep his roadway clear, without additional pay, except in the case of exceptionally heavy falls. Water accumulated in the rooms, but this is easily led off from the working faces of the long work. By the latter system a man can get from 25 to 50 more bushels of coal per day than by room and pillar. The loss of coal in working is reduced from 30 per cent. to about 10 per cent. Under the old system the rooms were turned off at right angles from the entries. In 12 ft. they were driven 7 ft. wide, in order to provide for the maintenance of the entry by the entry pillars thus formed. They were then widened out to 15 ft., and carried on in that width to their proper distance—say, 150 ft. Then the pillar was cut in two, and withdrawn towards the entry, within 36 ft. of the latter. After all the rooms of a section belonging to a side entry had been worked, the entry pillars were taken away, the work being done towards the main entry.

For the long wall work, blocks 25, 50, 75, and 100 ft. wide are laid off, by driving headings from two parallel side entries towards each other. The block thus formed is cut in two by a drift started at right angles from the middle of the heading, and withdrawn towards each side entry, leaving a sufficient pillar to support the entry. The methods and cost of timbering are described; the arrangements for ventilation briefly referred to; and the paper closes with a comparison of the advantages of the long work and room and pillar systems of working.

\* By T. R. EVANS: Metallurgical Review, New York.

From JAMES FORREST'S "Abstracts of Papers in Foreign Transactions and Periodicals," for the Proceedings of the Institution of Civil Engineers. Similar irregularities are not infrequent in English coal seams; but they generally occur with a sandstone roof, which comes down and cuts out the coal. These are often called "rock faults" or "wants"; in the Forest of Dean they are called "horses" and "lows"; in Northumberland "nips."

AMERICAN LOCOMOTIVES FOR AUSTRALIA.—Advices from New York state that the Baldwin Locomotive Works, Philadelphia, are engaged night and day on a large order for locomotives for Australia.

CASSELL'S PUBLICATIONS.—"Science for All" for July contains articles by Dr. Mann; Why the Rain Falls, by Prof. T. G. Bonney; The Story of a Volcano as Told in History; On the Protection of Iron from Rust; How the Air was Discovered; and What is Work. "The Great Industries of Great Britain" contains continuations of the articles—Hemp, Flax, and Jute; Health and Disease in Industrial Occupations; Wool and Worsted; Shipbuilding; Cotton; Iron and Steel; and Pottery and Porcelain. No. 31 of "Knight's Dictionary of Mechanics" extends from "Gearing Chain" to the beginning of "Gold."

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London: MINING JOURNAL Office, 26, Fleet-street, E.C., and to be had of all booksellers.

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VALUABLE LOOSE COLLIERY PLANT, &c., Or so much thereof as is necessary to cover the rent now due and charges. The effects comprise a nearly new tank locomotive ENGINE, with 12 in. cylinders, 24 in. stroke, built by Barclay and Co., Elmsbrook; about 200 corves; all the colliers' tools and lamps; about 250,000 red bricks, a large quantity of pit props, rails, pipes, wrought and cast iron scraps, new and old timber, and pit ropes; the contents of blacksmith's and wheelwright's shops, store rooms, and other outbuildings; a 15 ton weighing machine; the office furniture; fireproof safe, 72 in. by 42 in. by 27 in.; and other effects. Catalogues may be had at the Offices of the Auctioneers, East Parade, Leeds, or will be forwarded to applicants.

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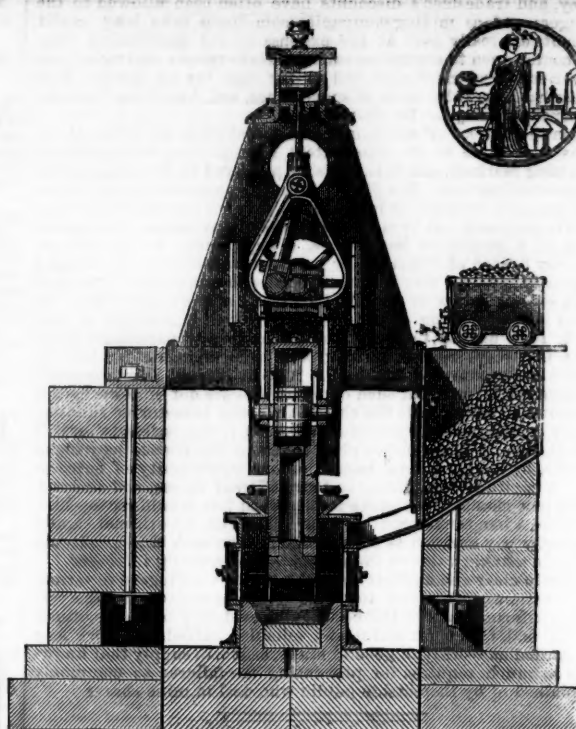
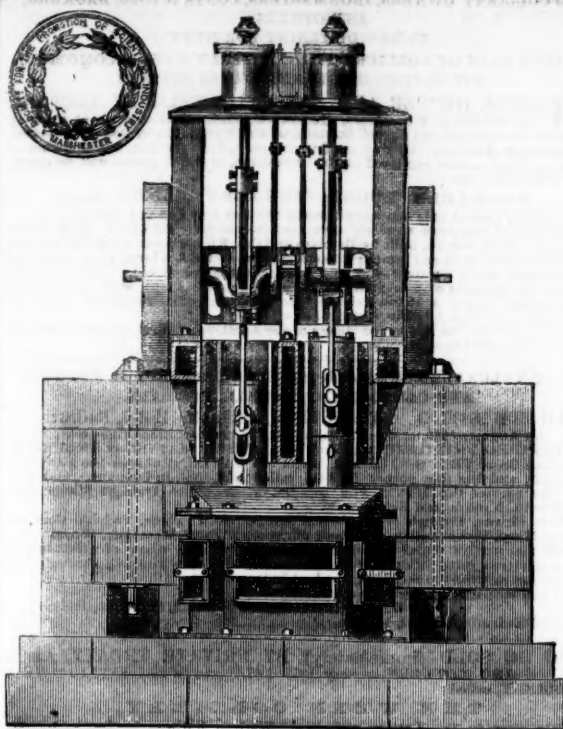
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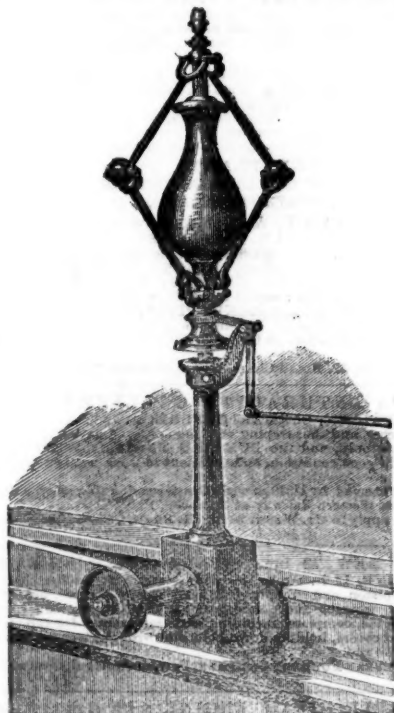
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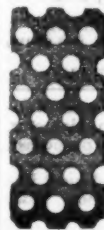
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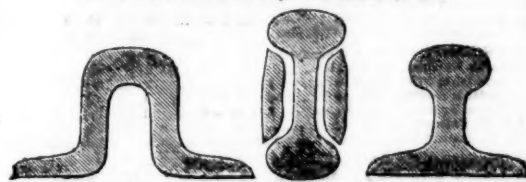
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